FOUNDED IN 1842

AMERICAN AGRICULTURIST

MARCH 5, 1927

1927 Reference Number

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Well, here it is—our annual Reference Number! This issue represents weeks of study and research to secure and boil down information and put it into shape so that you can get it quickly. Do you blame us for feeling just a little proud of this number?

Many of our readers said that our Reference Issue last year was alone worth much more than the subscription price for the whole year. But this one is bigger and better still. Be sure to save it for you will want to refer to it constantly.—The Editors.

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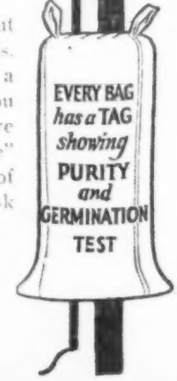

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Farm Facts About Our Eastern Agriculture

Farm Prices and the Outlook for 1927

We give below a summary of the price situation and the prospects for 1927, taken from *Farm Economics*, published by the Department of Agricultural Economics and Farm Management of the New York State College of Agriculture. This will give you at a glance the outstanding facts about most of the products you are interested in.

We call your particular attention to the favorable outlook for dairying. Butter is now quoted around 51 cents, or approximately 10 cents higher than it was last year at this date (February). Feed prices are low. Good dairy cows are scarce and high. Dairymen will remember, however, that we are now at the top of the cycle and that prices may be made to plunge downward very rapidly by efforts which lead to overproduction.

The summary of conditions are as follows:

Prices of most farm products, particularly crops, are somewhat lower than last year. Prices paid to farmers for food products in December averaged 9 points below December a year ago.

In January, 1926, cotton was selling at 40 per cent above prewar prices, but in December it was selling at 18 per cent below prewar prices.

For the year 1926 eggs were 10 points lower than in the previous year. Hogs were 11 points higher, and beef cattle 4 points higher than in the previous year.

The most striking change in prices in New York State is the improvement in the price of milk and cows. Prices of eggs, potatoes and apples are lower than last year. Hay continues to be a drug on the market.

For the coming year, prices of milk, beef cattle, and hogs promise to be favorable. Feed has been verp cheap and promises to continue so, at least until next summer. The present indication is for an increased planting of corn in the south. Since the number of cattle and hogs is low, cheap feed may be expected to continue, provided the weather is favorable for crops. It is hardly to be expected that feed will continue to be as cheap as it now is, but at present there are no facts that suggest that feed will be expensive.

As was the case when deflation occurred following the Civil War, eggs fell in price less than the grain crops. This resulted in an increase of 19 per cent in egg production from 1919 to 1924, while population increased only 8 per cent. This is having some effect on prices.

The outlook for the producers of timothy hay continues to be bad, with no reason for improvement to be expected, except in occasional years when the weather is very unfavorable. There is a good demand for alfalfa hay, which promises to continue.

Owing to several years of heavy losses, the potato acreage was greatly reduced. The weather for the past two years has been unfavorable. Prices therefore have been good. These prices may result in overplanting. Over a series of years cabbage and potatoes have been profitable crops on New York farms, but the variations in prices from year to year have always been great and are now more decided than formerly.

Live Stock on Farms

The number of horses on farms decreased 3.5 per cent last year. Mules remained stationary. The price of horses declined still further during the year.

Hogs increased one per cent. Estimates of the United States Department of Agriculture as to the breeding of sows for the spring pig crop indicate that only a little increase in hogs is likely to occur this spring. The relatively high hog prices will doubtless result in an overproduction of hogs, but apparently this is not likely to occur before 1928.

The number of sheep increased 5 per cent last year. The number is now higher than at any previous time since 1919.

The total number of cattle decreased 3 per cent. Cattle rose in price, as would be expected from the beef cycle. Presumably they will continue to rise in price for several years, because of the shortage brought about by a number of years of very low prices.

Qualifications of Voters at School Meetings

Who are voters. *All voters* at school meetings in either common or union school districts must have all of the following general qualifications:

General Qualifications

1 A citizen of the United States.
2 At least 21 years of age.

Special Qualifications

3 A resident within the district for a period of at least 30 days next preceding the meeting at which he or she offers to vote.

Any person who possesses all of the above general qualifications *and any one*

(*Continued on page* 33)

Farm Facts About New York State Agriculture

	1925	1920
NUMBER OF FARMS		
Total	29,671	29,702
Operated by:		
Owners	24,535	21,889
Managers	413	987
Tenants	4,723	6,826
Per cent operated by tenants	15.9	23.0
FARM ACREAGE		
All land in farms	1,924,545	† 2,282,585
Crop land, 1924	1,126,051	
Harvested	907,754	
Crop failure	20,994	
Fallow or idle	197,303	
Pasture, 1924	335,057	
Plowable	185,477	
Woodland	43,610	
Other	105,970	
Woodland not pastured	254,542	
All other land	209,895	
Average acreage per farm	64.9	76.8
FARM VALUES	**Dollars**	**Dollars**
Land and bldgs.	262,188,810	250,323,986
Land alone	130,018,427	142,182,498
Buildings	132,170,383	108,141,488
Average value of land and bldgs:		
Per farm	8,837	8,428
Per acre	136.23	109.67
LIVESTOCK ON FARMS		
Horses	57,123	72,621
Mules	5,035	5,705
Cattle, total	156,397	179,459
Beef cows*	3,526	2,654
Other beef cattle	2,565	4,118
Dairy cows*	122,780	130,497
Other dairy cattle	27,526	42,191
Swine, total	56,454	139,222
Breeding sows**	7,993	21,174
PRINCIPAL CROPS	**1924**	**1919**
Corn, Acres	158,022	233,598
Bushels	5,253,608	8,776,107
Oats, Acres	41,085	71,066
Bushels	1,122,275	1,477,319
Wheat, Acres	53,315	84,897
Bushels	1,004,833	1,378,269
Rye, Acres	46,555	74,174
Bushels	776,559	1,043,914
Hay, Acres	281,482	291,739
Tons	411,379	394,865
White potatoes:		
Acres	62,235	82,531
Bushels	8,624,939	10,319,304
Sweet potatoes:		
Acres	12,443	15,427
Bushels	1,692,734	1,772,829
Apples:		
Trees, Young	826,948	811,256
Of bearing age	1,426,683	149,776
Bushels	2,963,906	1,666,406
Peaches:		
Trees, all ages	2,385,318	2,820,691
Bushels	2,537,654	1,653,221
Pears:		
Trees, all ages	451,600	557,627
Plums and Prunes:		
Trees all ages	50,343	41,908
Grapes:		
Vines, all ages	1,918,585	1,672,179

† Comprising 1,555,607 acres of improved land, 454,768 acres of woodland, and 272,210 acres of "other unimproved land".
* Cows and heifers 2 years old and over. The total number of cows milked in 1924 was 118,784, including 1,414 "beef" cows.
** Sows and gilts for breeding purposes 6 months old and over.

Farm Facts About New Jersey Agriculture

	1925	1920
NUMBER OF FARMS		
Total	188,754	193,195
Operated by:		
Owners	159,949	151,717
Managers	2,251	4,376
Tenants	26,544	37,102
Per cent operated by tenants	14.1	19.2
FARM ACREAGE		
All land in farms	19,270,259	20,632,803
Crop land, 1924	9,088,221	
Harvested	8,290,693	
Crop failure	91,241	
Fallow or idle	706,287	
Pasture, 1924	7,402,578	
Plowable	2,080,744	
Woodland	2,023,332	
Other	3,298,302	
Woodland not pastured	1,781,080	
All other land	998,380	
Average acreage per farm	102.1	106.8
FARM VALUES	**Dollars**	**Dollars**
Land and bldgs.	1,368,453,738	1,425,061,740
Land alone	647,632,056	793,335,558
Buildings	720,821,682	631,726,182
Average value of land and bldgs:		
Per farm	7,250	7,376
Per acre	71.01	69.07
LIVESTOCK ON FARMS	**1925**	**1920**
Horses	446,747	536,171
Mules	8,275	7,323
Cattle, total	1,843,420	2,144,244
Beef cows*	21,114	20,407
Other beef cattle	27,145	42,763
Dairy cows*	1,373,447	1,481,918
Other dairy cattle	426,714	599,156
Swine, total	270,170	600,560
Breeding sows**	39,306	90,368
PRINCIPAL CROPS	**1924**	**1919**
Corn, Acres	170,566	320,325
Bushels	6,115,818	14,109,202
Oats, Acres	883,605	937,553
Bushels	28,846,335	21,595,461
Wheat, Acres	313,926	463,461
Bushels	5,864,717	9,136,268
Barley, Acres	85,975	116,109
Bushels	2,628,148	2,273,011
Rye, Acres	36,196	115,661
Bushels	543,807	1,520,552
Buckwheat Acres	217,760	217,946
Bushels	4,295,408	3,901,481
Navy beans, etc. Acre	155,397	45,897
Hay, Acres	5,019,707	4,987,520
Tons	5,779,477	6,264,685
Corn for silage:		
Acres	359,865	329,314
Tons	3,179,391	3,157,185
White potatoes:		
Acres	286,171	310,403
Bushels	38,980,765	32,470,847
Tobacco, Acres	2,111	2,613
Pounds	2,328,672	3,353,954
Apples:		
Trees, Young	2,457,970	2,932,281
Bearing age	9,454,127	9,636,698
Bushels	18,548,823	14,350,317
Peaches:		
Trees, All ages	3,419,685	3,696,891
Bushels	1,976,761	1,262,480

* Cows and heifers 2 years old and over. The total number of cows milked in 1924 was 1,357,169, including 17,656 "beef" cows.
** Sows and gilts for breeding purposes, 6 months old and over.

Farm Facts About Pennsylvania Agriculture

	1925	1920
NUMBER OF FARMS		
Total	200,420	202,250
Operated by:		
Owners	163,674	153,498
Managers	1,791	4,490
Tenants	34,955	44,262
Per cent operated by tenants	17.4	21.9
FARM ACREAGE		
All land in farms	16,293,275	17,657,613
Crop land, 1924	8,431,792	
Harvested	7,283,695	
Crop failure	103,229	
Fallow or idle	1,044,868	
Pasture, 1924	4,583,360	
Plowable	1,701,866	
Woodland	1,397,597	
Other	1,484,397	
Woodland not pastured	2,136,381	
All other land	1,146,242	
Average acreage per farm	81.3	87.3
FARM VALUES	**Dollars**	**Dollars**
Land and bldgs.	1,176,657,548	1,326,752,028
Land alone	559,861,344	726,158,051
Buildings	616,796,204	600,593,977
Average value of land and bldgs:		
Per farm	5,871	6,560
Per acre	72.20	75.14
LIVESTOCK ON FARMS		
Horses	415,722	505,968
Mules	54,488	55,081
Cattle, total	1,339,450	1,545,548
Beef cows*	51,915	36,700
Other beef cattle	139,749	193,045
Dairy cows*	861,013	885,855
Other dairy cattle	286,773	429,948
Swine, total	782,219	1,190,951
Breeding sows**	87,167	143,239
PRINCIPAL CROPS	**1924**	**1919**
Corn, Acres	1,010,543	1,346,404
Bushels	37,085,954	61,450,012
Oats, Acres	953,706	1,175,509
Bushels	32,135,081	29,183,172
Wheat, Acres	1,113,972	1,424,951
Bushels	18,230,807	23,453,978
Barley, Acres	13,906	13,785
Bushels	323,894	261,847
Rye, Acres	120,310	242,989
Bushels	1,686,830	3,208,003
Buckwheat Acres	206,635	249,654
Bushels	3,735,020	4,755,739
Hay, Acres	3,111,551	2,901,924
Tons	3,804,280	3,500,309
White potatoes:		
Acres	202,587	233,981
Bushels	22,237,690	22,051,685
Tobacco, Acres	44,999	44,799
Pounds	55,841,506	55,965,851
Apples:		
Trees, Young	2,228,870	2,628,053
Of bearing age	6,884,138	6,988,594
Bushels	7,362,929	5,512,795
Peaches:		
Trees of all ages	3,820,839	4,758,434
Bushels	1,646,463	1,099,735

* Cows and heifers 2 years old and over. The total number of cows milked in 1924 was 1,005,149, including 30,003 "beef" cows.
** Sows and gilts for breeding purposes 6 months old and over.

United States Crops—1926-1925

CROP	Acreage 1926	Acreage 1925	Unit	Production Per Acre 1926	Production Per Acre 1925	Production Total 1926	Production Total 1925	Farm Value December 1st Per Unit 1926	Farm Value December 1st Per Unit 1925
								Cents	*Cents*
Corn (all)	99,492,000	101,359,000	Bu.	26.6	28.8	2,645,031,000	2,916,961,000	64.4	67.4
Winter wheat	36,913,000	31,234,000	Bu.	17.0	12.9	626,929,000	401,734,000	121.2	147.9
Spring wheat	19,613,000	21,021,000	Bu.	10.5	13.1	205,376,000	274,695,000	115.7	132.4
Oats	44,394,000	44,872,000	Bu.	28.2	33.2	1,253,739,000	1,487,550,000	39.8	38.0
Barley	8,200,000	8,088,000	Bu.	23.3	26.8	191,182,000	216,554,000	57.4	58.9
Rye	3,513,000	3,974,000	Bu.	11.4	11.7	40,024,000	46,456,000	83.5	78.2
Buckwheat	707,000	747,000	Bu.	18.3	18.7	12,922,000	13,994,000	88.3	88.8
Hay (tame)	58,840,000	58,231,000	Tons	1.47	1.47	86,377,000	85,717,000	$14.09	$13.94
Hay (wild)	13,506,000	14,560,000	Tons	.74	.87	9,984,000	12,721,000	$10.07	$8.53
Clover seed	550,500	823,000	Bu.	1.45	1.35	797,000	1,113,000	$17.72	$14.87
Beans (dry)	1,659,100	1,606,000	Bu.	10.3	12.4	17,139,000	19,928,000	$2.93	$3.28
Potatoes (white)	3,163,000	3,092,000	Bu.	113.1	104.6	357,800,000	323,465,000	141.6	186.8
Potatoes (sweet)	830,000	779,000	Bu.	100.8	80.0	83,658,000	62,319,000	95.7	136.4
Tobacco	1,664,700	1,757,300	Lbs.	795.	783.	1,323,388,000	1,376,628,000	18.5	18.4
Maple sugar	*15,245,000	*15,313,000	Lbs.	x2.28	x1.83	34,776,000	27,948,000	...	...
Apples (total)	...	...	Bu.	...	...	246,460,000	172,389,000	...	...
Apples (com.)	...	...	Bbls.	...	...	39,095,000	33,246,000	...	...
Peaches	...	...	Bu.	...	...	68,425,000	46,562,000	...	...
Pears	...	...	Bu.	...	...	25,644,000	20,720,000	...	...
Grapes	...	...	Tons	...	...	2,349,117	2,064,085	...	...
Cranberries	28,000	28,000	Bbls.	25.7	20.3	720,000	569,000	$6.75	$11.20
Cabbage	122,610	118,710	Tons	8.0	8.0	981,700	946,200	$17.71	$17.43
Cauliflower	22,560	15,140	C't's	246.	224.	5,550,000	3,393,000	$1.28	$1.15
Celery	24,270	22,830	C't's	268.	293.	6,523,000	6,685,000	$1.91	$1.79
Lettuce	106,100	86,020	C't's	162.	187.	17,236,000	16,076,000	$1.60	$1.47
Onions	74,560	65,050	Bu.	277.	299.	20,625,000	19,423,000	$ .76	$1.08

* Trees tapped. x Per tree. z A few minor crop prices for dates earlier than December 1st.

Helps For the Man Who Milks Cows

New York Milk Hauling Costs

The following schedule of freight rates is now in effect.:

Miles	Freight Rate 40-qt Can	100 lbs
10 or less	.235	.275
11 to 20	.245	.285
21 to 30	.265	.310
31 to 40	.275	.320
41 to 50	.295	.345
51 to 60	.305	.355
61 to 70	.320	.370
71 to 80	.330	.385
81 to 90	.340	.395
91 to 100	.355	.415
101 to 110	.360	.420
111 to 120	.370	.430
121 to 130	.385	.450
131 to 140	.395	.460
141 to 150	.400	.465
151 to 160	.415	.485
161 to 170	.420	.490
171 to 180	.430	.500
181 to 190	.440	.510
191 to 200	.450	.525
201 to 210	.455	.530
211 to 220	.470	.545
221 to 230	.475	.550
231 to 240	.480	.560
241 to 250	.485	.565
251 to 260	.500	.580
261 to 270	.505	.585
271 to 280	.510	.595
281 to 290	.515	.600
291 to 300	.530	.615
301 to 310	.535	.620
311 to 320	.540	.630
321 to 330	.545	.635
331 to 340	.560	.650
341 to 350	.565	.655
351 to 360	.570	.665
361 to 370	.575	.670
371 to 380	.580	.675
381 to 390	.590	.685
391 to 400	.595	.690

The New York Milk Market embraces Greater New York, Jersey City, Hoboken, Weehawken, Newark, Paterson and the railroad towns between these places.

Rations for Dairy Cows

The home mixing of the dairy ration is not always practical. It may be impossible for a dairyman to obtain all of the ingredients at the very time he wants them. Furthermore he may find difficulty in maintaining the uniformity of analysis. Then again the man who mixes his own feed must put a great deal of study and attention to the problem. Mixing feed consists of much more than just shoveling a lot of materials together. Unless the dairyman is prepared to meet these various factors, he will undoubtedly find it better to purchase ready mixed commercial grains, naturally only from the more recommendable companies. Dairy feeds should be bought strictly on quality.

Grain Mixture for Dry Cows

100 lbs. Hominy feed — 100 lbs. Ground oats
100 lbs. Wheat bran — 50 lbs. Oil Meal

* * *

Grain Mixture for Milk with Clover or Alfalfa

100 lbs. Wheat bran — 200 lbs. Hominy
150 lbs. Ground oats — 50 lbs. Oil meal

This mixture will contain a little over 14% Protein.

* * *

200 lbs. Ground oats — 100 lbs. buckw't mid
100 lbs. corn f'd meal — 100 lbs. gluten feed
100 lbs. ground barley — 50 lbs. Oil Meal

This mixture will contain about 16% Protein.

* * *

Grain Mixture for Timothy Hay

100 lbs. wheat bran — 100 lbs. Oil Meal
100 lbs. hominy — 50 lbs. cottonseed meal
150 lbs. gluten feed

This mixture will contain about 24% Protein.

* * *

Grain Mixture to be Fed with Pasture

300 lbs. wheat bran — 200 lbs. gluten feed
300 lbs. hominy — 100 lbs. oil meal

* * *

Grain Mixture for Young Stock

500 lbs. gluten feed — 400 lbs. wheat bran
500 lbs. ground oats — 100 lbs. oil meal
500 lbs. hominy feed

* * *

Grain Mixture for Fitting Cows for Test

50 lbs. hominy — 30 lbs. ground oats
30 lbs. wheat bran — 10 lbs. oil meal

* * *

Grain Mixture for Official Testing

200 lbs. wheat bran — 200 lbs. hominy
200 lbs. gluten feed — 150 lbs. oil meal
100 lbs. ground oats — 150 lbs. cottonseed

(From Better Dairy Farming by Savage and Maynard)

How to Make and Feed Calf Meal Gruel

Mix together 5 pounds of soluble blood flour, 10 pounds of hominy feed, 10 pounds of red-dog flour, and 10 pounds of linseed oilmeal. Into a pound of this dry mixture stir enough cold water to make a paste, to which add 5 pounds of water at a temperature of 145° F. Test the temperature of the water with a dairy thermometer, for if the gruel becomes hotter than 145° it will be injured. A dairy thermometer can be bought for less than a dollar, and would soon save its cost in gruel. Feed the gruel warm to the calf as you would skim milk.

In changing from whole milk to the gruel substitute, it is not wise to change as fast as one would change to skim milk. You should take at least two weeks to make the change. The best practice in order to raise a good calf is to continue feeding some milk until the calf is five months old. Do this by putting one pint of whole milk into each feeding of gruel.

A Dry Grain Mixture for Calves

When calves are about three weeks old, feed them all the dry grain mixture that they will lick up clean after drinking their milk. Put the grain mixture in the feed box, not in the skimmilk, nor in the pail from which the milk was fed. The following grain mixture is recommended:

30 lbs. wheat bran
30 lbs. ground oats
30 lbs. cornmeal
10 lbs linseed oilm'l
} or {
90 lbs. grnd. oats
10 lbs. linseed oilmeal

When the calf is four or five months old, two pounds of dry grain fed twice daily should be a sufficient grain ration.

Quantities of Roughage and Grain to Feed

1. Under most circumstances the cow should be fed all the roughage that she will eat up clean, adjusting grain ration to milk production. Only when the cow tends to become overfat should quantity of roughage be restricted.

2. A grain mixture should be fed in proportion of 1 lb. to each 3 pints or lbs. of milk produced daily by cow, except in case of a cow producing a flow of 40 lbs. or more, when ration can be 1 lb. to each 3½ or 4 lbs. of milk. An even better rule is 1 lb. of grain each day for every lb. of butter fat produced during the week by the cow.

3. Feed all the cow will respond to in milk production. When she begins to put on flesh, cut down grain.

How to Balance a Ration for Cows

The following is a short method of balancing rations for cows, taken from Warren's Farm Management:

LOW PROTEIN GROUP

Corn	Buckwheat
Oats	Hominy
Wheat	*Dried Beet Pulp*
Barley	*Corn and cob meal*
Rye	

MEDIUM PROTEIN GROUP

Wheat bran	
Mixed wheat feed	Cotton seed feed
Standard W. Mids	Pea Meal
Flour W. Mids	Cull Beans

HIGH PROTEIN GROUP

Linseed oil meal	Gluten feed
Cotton seed meal	Buckwheat mids

The ordinary grain feeds may be divided into three groups, low protein (less than 12%). Medium protein (between 12 and 24%) and high protein (over 24%). Heavy feeds are in dark faced type. Light weight feeds in italics.

Mixed hay, corn silage, corn stalks or fodder are similar in composition. If one low protein feed, one medium protein feed and one high protein feed are mixed in equal weights, the mixture will be a well balanced ration to feed with the above roughages. For the sake of variety it is desirable to use at least three feeds.

An ideal ration should weight one lb. per quart. To secure this, the mixture, should contain at least one light weight feed (printed in italics).

A dairy cow in full milk should have all the hay and silage she will eat and if 4% milk or richer should have one pound of grain for each 3-3½ lbs. of milk she produces. A cow giving milk with less than 4% fat should have one lb. of grain for every 3½-4 lbs of milk. If clover or alfalfa hay is used, less high protein feeds are needed.

Average Weight of Feed Stuffs

Feeding Stuff	One Quart Weighs Pounds	One Pound Measures Quarts
Corn, whole	1.7	0.6
Corn, meal	1.5	0.7
Corn, bran	0.5	2.0
Corn and cob meal	1.4	0.7
Gluten meal	1.7	0.6
Gluten feed	1.3	0.8
Germ meal	1.4	0.7
Wheat, whole	2.0	0.5
Wheat, ground	1.7	0.5
Wheat, bran	0.5	2.0
Wheat middling (stand)	0.8	1.3
Oats, whole	1.0	1.0
Oats, ground	0.7	1.4
Rye, whole	1.7	0.6
Rye, meal	1.5	0.7
Rye, bran	0.6	1.8
Rye, middlings	1.6	0.6
Barley, whole	1.5	0.7
Barley, meal	1.1	0.9
Buckwheat	1.4	0.7
Buckwheat middling	0.9	1.1
Soybeans	1.8	0.6
Alfalfa meal	0.6	1.7
Molasses	3.0	0.3
Linseed meal, old process	1.1	0.9
Linseed meal, new process	0.9	1.1
Cotton-seed meal	1.5	0.7

Average Composition of Milk of Different Breeds

(From comparison of breeds at the N. Y. Agricultural Experiment Station)

Total Solids	Solids not Fats	Fat	Casein	Milk Sugar	Ash
Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct
		AYRSHIRE			
13.06	9.35	3.57	3.43	5.33	.698
		DEVON			
13.77	9.60	3.70	4.15	5.07	.760
		GUERNSEY			
14.60	9.47	5.12	3.61	5.11	.753
		HOLSTEIN FRIESIAN			
12.39	9.07	3.46	3.39	4.84	.735
		JERSEY			
15.40	9.80	5.61	3.91	5.15	.743

Weight of Milk and Cream

One quart of milk weighs 2.15 lbs.

WEIGHT OF CREAM.

	Per Quart	Per Gallon
20% fat	2.115 lbs.	8.460 lbs.
25% fat	2.100 lbs.	8.400 lbs.
30% fat	2.088 lbs.	8.352 lbs.
40% fat	2.055 lbs.	8.220 lbs.
50% fat	2.028 lbs.	8.112 lbs.

Milk for a Pound of Butter

	Per cent	Pounds or Quarts	
Milk testing	3.0	29.56	13.28
Milk testing	3.6	24.2	11.07
Milk testing	3.8	22.9	10.48
Milk testing	4.0	21.7	9.96
Milk testing	4.2	20.7	9.49

Milk weighs 8 3-10 pounds to the gallon; 1 quart will weigh 2.15 pounds.

Cheese Yield, Using Fat Content as a Basis

% fat in milk	Lbs. cheese from 100 lbs. milk	Lbs. cheese from 1 lb. fat in milk
3.0	8.28	2.76
3.5	9.41	2.68
4.0	10.56	2.64
4.8	12.51	2.60

Production, Composition, and Value of the Manure Per Thousand Pounds of Live Weight

Animal	Constituent	Pounds produced per year	Water %	Water Lbs.	Dry Matter %	Dry Matter Lbs.	Ammonia %	Ammonia Lbs.	Phosphoric acid %	Phosphoric acid Lbs.	Potash %	Potash Lbs.
Horse	Urine	4,000	90	3,600	10	400	1.77	71	Trace	Trace	1.20	48
	Dung	14,500	70	10,150	30	4,350	0.55	80	0.30	44	0.40	58
	Total	18,500	74	13,750	26	4,750	0.87	161	0.27	50	0.57	106
Cow	Urine	8,000	93	7,440	7	560	0.97	78	Trace	Trace	1.00	80
	Dung	18,000	80	14,400	20	3,600	0.43	77	0.20	36	0.75	45
	Total	26,000	84	21,840	16	4,160	0.60	156	0.15	40	0.48	125
Pig	Urine	12,000	96	11,520	4	480	0.61	73	0.01	12	0.60	72
	Dung	18,000	78	14,040	22	3,960	0.36	65	0.25	45	0.30	54
	Total	30,000	85	25,560	15	4,440	0.46	138	0.19	57	0.42	126
Sheep	Urine	4,000	87	3,915	13	585	1.82	82	0.05	23	1.80	57
	Dung	8,500	55	4,675	45	3,825	.97	83	0.40	34	0.50	43
	Total	13,000	66	8,590	34	4,410	1.28	166	0.44	57	0.77	100
Hen	Total	10,000	55	5,500	45	4,500	1.58	158	0.80	80	0.90	90

Dairymen's League Pool Prices and Distributions

Month	Gross	Exp.	Net	Cert.	Cash
1921					
May	1.735	.03	1.705	.10	1.60$
June	1.455	.035	1.42	.10	1.32
July	1.745	.045	1.70	.10	1.60
August	2.195	.045	2.15	.20	1.75
September	2.29	.05	2.24	.20	2.04
October	2.52	.05	2.47	.20	2.27
November	2.48	.06	2.42	.20	2.22
December	2.455	.065	2.39	.20	2.19
1922					
January	2.165	.055	2.11	.20	1.91
February	2.045	.075	1.97	.20	1.77
March	1.65	.05	1.60	.20	1.40
April	1.395	.06	1.335	.10	1.23$
May	1.355	.055	1.30	.10	1.20
June	1.40	.055	1.345	.10	1.24$
July	1.68	.06	1.62	.20	1.42
August	1.87	.115	1.755	.15	1.60$
September	2.095	.095	2.00	.15	1.85
October	2.27	.06	2.21	.20	2.01
November	2.53	.065	2.465	.20	2.26$
December	2.82	.07	2.75	.20	2.55
15½@ withheld until 12/10/21.					
1923					
January	2.285	.075	2.21	.10	2.11
February	2.38	.07	2.31	.10	2.21
March	2.20	.07	2.13	.10	2.03
April	2.15	.075	2.075	.15	1.92$
May	1.90	.08	1.82	.10	1.72
June	2.00	.085	1.915	.10	1.81$
July	2.08	.095	1.985	.15	1.83$
August	2.18	.095	2.085	.10	1.98$
September	2.30	.10	2.20	.10	2.10
October	2.42	.10	2.32	.10	2.22
November	2.43	.10	2.33	.10	2.23
December	2.23	.08	2.15	.15	2.10
1924					
January	2.00	.08	1.92	.05	1.87
February	1.90	.08	1.82	.05	1.77
March	1.88	.08	1.80	.05	1.75
April	1.835	.085	1.75	.05	1.70
May	1.485	.085	1.40	.10	1.30
June	1.42	.08	1.34	.10	1.24
July	1.50	.08	1.42	.10	1.32
August	1.72	.085	1.635	.10	1.53$
September	1.93	.085	1.845	.10	1.74$
October	1.95	.09	1.86	.10	1.76
November	2.35	.09	2.26	.10	2.16
December	2.50	.09	2.41	.10	2.37
1925					
January	2.50	.085	2.415	..	2.41$
February	2.38	.08	2.30	..	2.30
March	2.33	.07	2.26	..	2.26
April	2.20	.065	2.135	.10	2.03$
May	1.955	.065	1.89	.10	1.79
June	1.865	.065	1.80	.10	1.70
July	1.915	.065	1.85	.10	1.75
August	2.165	.065	2.10	.10	2.00
September	2.28	.065	2.215	.10	2.11$
October	2.38	.07	2.31	.10	2.21
November	2.48	.07	2.41	.10	2.31
December	2.50	.07	2.43	.10	2.33
1926					
January	2.46	.07	2.39	.10	2.29
February	2.38	.07	2.31	.10	2.21
March	2.29	.07	2.22	.10	2.12
April	2.18	.065	2.115	.10	2.01$
May	2.00	.065	1.935	.15	1.78$
June	1.872	.062	1.81	.15	1.66
July	2.012	.062	1.95	.10	1.85
August	2.432	.062	2.36	.10	2.26
September	2.624	.064	2.56	.10	2.46
October	2.642	.062	2.58	.10	2.48
November	2.784	.064	2.72	.10	2.62
December	2.862	.062	2.80	.10	2.70
1927					
January	2.732	.062	2.67	.10	2.57

To Tell Age of Animals

Horse—By Teeth

2½ years—Permanent middle incisors appear (upper and lower).

3½ years—Permanent intermediate incisors appear.

4½ years—Permanent corner incisors appear.

6 years—Lower middle incisor cups lost.

7 years—Lower intermediate incisor cups disappear.

8 years—Corner incisor cups disappear.

9½ years—Upper middle incisor cups disappear.

10½ years—Upper intermediate incisor cups disappear.

11½ years—Upper corner incisor cups disappear.

After 9 years of age, indications are only approximate.

Cattle—By Teeth

15 to 18 months—First pair permanent incisors appear.

24 to 27 months—Second pair permanent incisors appear.

33 to 36 months—Third pair permanent incisors appear.

Sheep—By Teeth

Lambs have a full set of baby or "milk" teeth soon after birth. At from 12 to 14 months two permanent teeth appear at the center; two more adjoining, at from 22 to 24 months; a third pair at 34 to 48 months. From then on only an estimate can be made. As the sheep grows older, the teeth gradually spread and become shorter with wear. Still later sheep gradually lose their teeth. A broken-mouth sheep has difficulty in eating and should not be kept in the flock.

More Helps For the Dairyman

How to Figure the Contents of a Silo

Figuring the contents of a silo would be a very simple matter if the silo contained nothing but air or water or rocks; but silage packs down so that the higher the silo the greater the pressure on the bottom layers, which means that there are more pounds to the square foot at the bottom of the silo than at the top. The time of filling the silo and the condition of the corn also cause a variation of the weight.

However, the following table shows the weight of the average silage at the various depths of a cubic foot. Another and more complete table will be found at the bottom of this page. The first figure indicates the feet and the second the number of pounds: 10-26; 12-27½; 14-29; 16-30½; 18-32; 20-33½; 22-34⅝; 24-36; 26-37¼; 28-38 1/3; 30-39⅜; 32-40⅜; 34-41¾; 36-42¾; 38-44; 40-45; 42-46; 44-47; 46-48; 50-50; 60-54.

An Illustration Worked Out

Now let us, for an illustration, figure the contents in a silo 12 feet in diameter, 40 feet high, containing 36 feet of silage, after the silage has settled. It is first necessary to get the area of the bottom. Some of you will remember the old arithmetic rule that the area of any circle is obtained by squaring the radius and multiplying by 3.1416. Putting it another way, the area is figured by multiplying half the diameter by itself and then by 3.1416. The diameter of this silo is 12 feet. The radius therefore, is 6 feet, and 6 times 6 times 3.1416 gives 113.1 square feet.

Multiplying this area of 113.1 square feet by 36 feet (the depth of the silage), gives 4,071.16 cubic feet of silage. By consulting the above table, it will be found that the number of pounds per cubic foot, when the height of silage is 36 feet, is 42¾ pounds. Therefore, if we multiply 4,071.6 cubic feet by 42¾ we find that the silo contains, in round numbers, 174,000 pounds. Dividing by 2,000 gives 87 tons.

Now let us suppose that 16 feet have been fed off and you desire to know the remaining tonage. By consulting the table it will be found that 16 feet of silage averages over 30½ pounds to the cubic foot. Therefore, multiplying the number of cubic feet—1,809.6—by 30½, we have 53,175 pounds fed out. The cubic content of 1,809.6 is obtained by multiplying one-half the diameter (6 feet), by itself, then by 3.1416 and then again by the height, 16, (6 x 6 x 3.1416 x 16). By multiplying this cubic content, as we said above, by 30½, we get 53,175 pounds fed out. Subtract this amount fed out from 174,000 pounds (the total amount in the silo), which gives a difference of 118,825 pounds remaining, which is approximately 59 tons.

Table of Silo Capacities and Requirements

	Capacity tons	Acreage to fill: 15 tons to acre	Cows it will keep 6 mos., 40 lbs. daily.
10 x 20	28	2	7
12 x 20	40	3	11
12 x 24	50	3⅓	13
14 x 22	62	4⅛	17
14 x 24	67	4⅜	19
16 x 24	86	6	25
16 x 26	95	6¾	27
16 x 30	108	7¼	31
18 x 28	120	8	33
20 x 24	135	9	36
20 x 30	170	12	46

Care of Fresh Cows

Warm drinking water for a few days, if very cold weather, so as not to chill cow, as she is always feverish at this time.

2. Feed bran mashes for two or three days, then start with small grain ration.

3. When udder is normal, increase ration gradually, about one pound every other day until maximum milk flow is reached.

4. Then reduce feed slightly and continue feeding according to her production.

Anti-Fly Sprays

Dissolve one pound of fish oil soap in soft water and bring to the boiling point. Mix this solution with four gallons of crude oil and stir thoroughly. For spraying, mix one gallon of this stock solution and five teaspoonfuls of Black-leaf 40 with four gallons of water. Mix thoroughly and apply with a force pump and spray nozzle.

Another mixture which will spray forty cows for ten days, twice per day, at a cost of one cent per cow per day, can be made as follows: Take four and one-half quarts coal tar dip, four and one-half quarts fish oil, three quarts coal oil, three quarts of whale oil, one and one-half quarts oil of tar. Mix these together and add three pounds of dissolved laundry soap and add the whole mixture to thirty gallons of lukewarm water. Mix thoroughly.

Amount of Silage to Feed

Silage is a good feed at any season of the year, but it is especially valuable in winter when farm stock are without green feed (Fig. 126). It is for winter feeding what pasture grass is for summer feeding. The amount that may be fed daily to different classes of farm animals is approximately as follows:

Kind of Stock	Pounds
Dairy Cattle	
Cows (in full flow of milk)	30-50
Cows (dry)	20-30
Heifers	15-20
Beef Cattle	
Breeding Cows	30-40
Two-year-olds	30-40
Calves and yearlings	15-30
Fattening Cattle	
First stage	25-30
Middle stage	15-20
Last forty days	10-15
Horses*	
Brood mares	20-30
Idle horses	15-20
Yearlings	10-15
Sheep	
Breeding ewes	3- 4
Fattening lambs	2- 3
Fattening wethers	3- 4

*Silage is not a safe feed for horses unless it is perfectly fresh and free from mold.

Normal Temperature of Cows

The normal temperature of cows is 101-102 F. The temperature is taken at the rectum with a clinical thermometer.

Pulse Beat

The normal pulse beat of cows is 45-55 a minute. The pulse may be taken where an artery winds around the jawbone just at the lower side of the flat muscle on the side of the cheek, or on the back part of the fore fetlock.

Respiration

The normal respiration of cows is 15-19 times a minute.

Quantity of Ice Required for a Dairy Farm

The quality of ice needed for a dairy farm depends on its location, number of cows milked, and methods of handling the product. In the Northern States it has been found that with a moderately good ice house, where the shrinkage from melting is not more than 30 per cent, half a ton of ice per cow is sufficient to cool the cream and hold it at a low temperature for delivery two or three times a week. It must be understood, however, that suitable cooling tanks are necessary under this estimate. The half-ton-per-cow estimate for ice to be stored allows for a reasonable waste and also for ordinary household use. If whole milk is to be cooled the quantity of ice stored must be increased to one and one half tons per cow in the North and two tons per cow in the South. To meet the needs of the average family on a general farm it will be necessary to store about five tons.

Relation of Size of Silo to Length of Feeding Period and Size of Herd

Cows consuming 40 pounds of silage daily (number)	Feed for 180 days: Estimated amount of silage consumed (tons)	Feed for 180 days: Size of silo Diameter (feet)	Feed for 180 days: Size of silo Height (feet)	Feed for 240 days: Estimated amount of silage consumed (tons)	Feed for 240 days: Size of silo Diameter (feet)	Feed for 240 days: Size of silo Height (feet)
10	36	10	25	48	10	31
12	43	10	28	57	10	35
15	54	11	29	72	11	36
20	72	12	32	96	12	39
25	90	13	33	120	13	40
30	108	14	34	144	15	37
35	126	15	34	168	16	38
40	144	16	35	192	17	39
45	162	16	37	216	18	39
50	180	17	37	240	19	39

Capacity of Ice Houses

A cubic foot of ice weighs about 57 pounds, so in storing ice it is customary to allow from 40 to 50 cubic feet per ton for the mass of ice, but the quantity that an ice house of a given size will hold depends upon the manner in which the ice is stored. Generally a cubic foot on an ice house will hold the quantities given below:

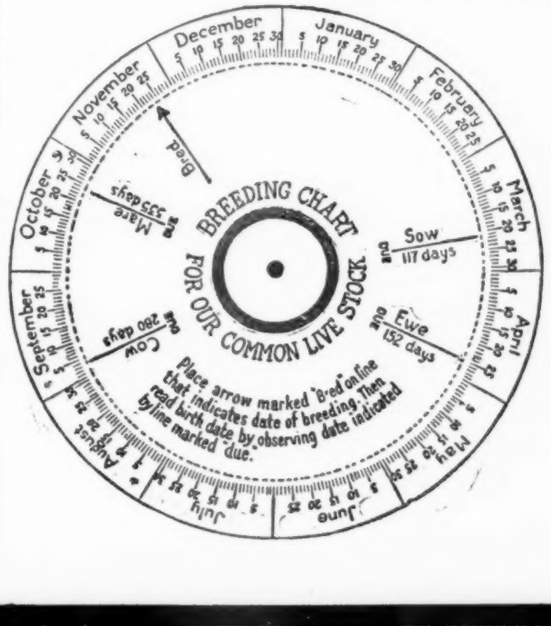
	Pounds
Ice thrown in at random about	30 to 35
Ice thrown in in irregular pieces and broken sufficiently to pack closely	35 to 40
Ice piled loosely	40 to 45
Ice piled closely and with very slight crevices between	45 to 50

Unless the ice house has permanently insulated walls, at least 12 inches must be left between the ice and the wall of the building for insulation, and an equally large space for insulation must be allowed beneath and above the ice. From this it is possible to calculate readily the quantity of ice that any given house will hold. Thus, allowing 45 cubic feet per ton, an uninsulated ice house 18 by 12 by 19 feet high, allowing 1 foot around the ice for insulation, will hold about 38 tons, while the same-sized house if insulated will hold about 48 tons.

Inside dimensions of insulated ice houses for various quantities of ice:

Quantity of Ice (Tons)	Length (Feet)	Width (Feet)	Height (Feet)
10	10	7	7
20	14	8	8
25	14	10	8
30	14	10	10
40	18	10	10
50	16	12	12

Gestation Table for Livestock Breeders



Cut out this chart. Cut dotted line with a sharp knife. Paste the two pieces on two pieces of cardboard and fasten them in the center so they will turn freely. If you do not wish to cut this issue, additional copies of this table may be had by writing American Agriculturist.

How to Prevent the Growth of Horns

The time to dehorn cows is before they are 1 week old. Clip the hair from the little bump or horn "button" where the horn starts rub some vaseline in a circle around the horn button and rub the button with a stick of caustic potash until a spot about the size of a dime is red but not bleeding. Put the potash only on the born button. Don't put too much on, it may spread and injure the calf. Don't turn the calf out in the rain immediately after putting on the potash, the rain will wash the potash into the calf's eyes. The caustic potash can be bought at a drug store. Don't handle it with the bare hands. Keep it in a tightly corked bottle or it will absorb moisture from the air and form a liquid.

Tonics and Condition Powders

(U. S. D. A.)

Healthy animals do not need tonics and condition powders. If a tonic is needed the feeder should examine his methods. Plenty of good feed, fresh water, exercise, sunshine, pure air, with sanitary surroundings, should keep an animal in good health. If a tonic is desired, one of known composition may be mixed at home. The following formulas are suggested for all stock except hogs.

Formula No. 1	Pounds	Formula No. 2	Pounds
Glauber Salt	2	Glauber salt	5
Soda	1	Saltpeter	1½
Salt	1	Fenugreek	1
Fenugreek	⅛	Gentian	2
Linseed meal	25	Linseed meal	500

For horses a heaping tablespoonful of one of these mixtures fed with the grain three times a day is sufficient. Other stock can be given amounts in proportion to their size.

Age at Which to Breed

Breed Holsteins and Ayrshire heifers to freshen at about 27 to 30 months.

2. Guernseys and Jerseys at 24 to 27 months.

3. The age to breed depends on size and development. If undersized, delay breeding a few months.

How to Make and Use a Solution for the Milking Machine

A 20-gallon stone jar should be used. Wooden or metal wash tubs will weaken most of the solutions now in use. The jar must be kept covered.

The best solution has common salt for the basis. The jar should be filled with clean water and clean salt added until some remains permanently on the bottom of the jar. Brine alone is a fairly effective solution, but the addition of a hypochlorite solution will keep the salt solution sterile. Hypochlorite solution may be made from chloride of lime or it may be purchased already prepared in commercial form.

The hypochlorite solution should be added to the brine once a week in cool weather and twice a week in warm weather. This is because all hypochlorites homemade or commercial, lose strength very rapidly if milk, straw, manure, cows' hairs, wood, and the like are introduced into the solution. For this reason, all adhering dirt should be removed from the rubber parts at the first flushing of the machine in hot water. Hypochlorite in water, without salt, is unsatisfactory.

(*Continued on page 19*)

Handy Facts for the Crop Grower

How to Renew Old Pastures

The use of lime and acid phosphate together with a small seeding will do wonders with most old pastures. Where the land is valuable and can be easily plowed, the best way to renew the pasture is by plowing and seeding, using oats as a nurse crop and applying about 200 pounds of acid phosphate and at least a ton of lime to the acre.

Most pasture lands, however, cannot be plowed, in which case they may usually be profitably renewed by top dressing with lime and acid phosphate. The lime is on the surface and takes some time to dissolve and penetrate. Therefore, it will be about three years before good results can be obtained. In top dressing, use at least one ton of lime with 300 pounds of acid phosphate per acre, following a mixture of nine pounds of grass seed made up as follows:

Alsike clover	1 lb.
White clover	2 lbs.
Kentucky bluegrass	2 lbs.
Orchard grass	2 lbs.
Redtop	2 lbs.

Thousands of acres of Eastern pasture lands could be profitably renewed. Why not try it out on a small scale? Write AMERICAN AGRICULTURIST for further details if interested.

Grass Seed Mixtures for Meadows

First: For good Timothy and Clover land where there is plenty of lime in the soil:

Timothy	15 lbs.
Red Clover	10 lbs.

Second: On land where Red Clover is uncertain and that is deficient in lime:

Timothy	15 lbs.
Red Clover	5 lbs.
Alsike Clover	4 lbs.

Third: On land where neither Timothy nor Clover gives good results. Where land is wet and deficient in lime:

Timothy	10 lbs.
Red Top	5 lbs.
Red Clover	5 lbs.
Alsike Clover	4 lbs.

Fourth: On land that is very deficient in lime or that is very wet:

Red Top	10 lbs.
Alsike Clover	6 lbs.

Summary of the New York Seed Law

The law requires the labelling of all agricultural seeds which are sold, offered, or exposed for sale, within New York State, for seeding purposes within the State, either in bulk, packages, bags or other containers of 10 pounds or more, with the exception of special mixtures, such as lawn mixtures, when 8 ounces is the minimum limit of weight.

The term "agricultural seed", as defined in the law, includes practically every kind of seed commonly planted upon New York farms.

The law designates the following weeds as noxious in this State: quack grass, wild mustards, Canada thistle, and dodders.

The law requires each lot of seed to carry a statement, tag or label giving the following information:

The commonly accepted name of the seed.
The approximate percentage, by weight, of purity.
The percentage of weed seeds.
The names of the noxious weeds.
The percentage of germination.
Name and address of the vendor.

Provisions are made for labelling mixtures and special mixtures. Under certain stated conditions, agricultural seeds or mixtures of the same are exempted from the provisions of the law.

The law provides for the unobstructed inspection of any lot of seed in any place or upon any premises, the authorized representatives or agents of the Commissioner of Agriculture having access at all reasonable hours to such premises.

The Commissioner of Agriculture is empowered to administer the law in case of violation of its provisions.

The seed law grants permission to the New York Agricultural Experiment Station at Geneva to maintain facilities for analyzing and testing samples of seeds collected under its provisions.

How To Get Seed Tested

Provision is made in the law whereby any citizen of the State shall have the privilege of submitting to the seed laboratory samples of agricultural seeds for test and analysis. This privilege is subject, however, to such rules and regulations as may be adopted by the Director and Board of Control of the Geneva Station.

A more complete summary of these facts concerning "The New York Seed Law and Seed Testing" is given in Bulletin Number 476 of the Geneva Station, which will be sent upon application.

A copy of the New York Seed Law may be had upon application to the Commissioner of Agriculture, Albany, N. Y.

All samples of seeds and correspondence relating thereto should be addressed to the Seed Laboratory, New York Agricultural Experiment Station, Geneva, N. Y.

Inoculating Legume Seed with Soil

Scrape off about an inch of the top layer of dirt—this because sunlight kills the inoculation in the top layer.

2. In the second to fourth inch of dirt secure about as much dirt by bulk as there is seed to inoculate.

3. Spread this out in a thin layer on an empty floor or other place where the sun can't strike it and let it dry 24 hours and then pulverize it finely.

4. Spread the seed out in a thin layer on a tight board floor or canvas and sprinkle with a mixture of equal parts of molasses and water.

5. Mix the pulverized dirt with the seed until every seed is covered with a thin layer of fine dirt.

6. Since sunlight kills inoculation, all of this work should be done in the shade.

How the Seed Staining Law Works

The recent federal seed regulations which provide for the dyeing of all unadapted, imported alfalfa and clover seed is a help to New York farmers because they need the hardiest varieties they can get.

It is best for farmers to buy seed that is produced in northern United States and Canada, and of the alfalfas, Ontario Variegated, Grimm, and hardy, northern-grown Common are best adapted.

The following regulations show how the federal seed act applies:

1. Alfalfa seed of known foreign origin, other than Canada, and not formally determined by the secretary of agriculture to be unadapted to general use in the United States, will be colored approximately one per cent green.

2. Imported alfalfa seed, formally determined by the secretary of agriculture to be unadapted to general use in the United States, will be colored approximately ten per cent red. The same coloring is required for imported alfalfa seed of unknown origin.

3. Alfalfa seed from Canada will be colored approximately one per cent violet.

4. Red clover seed of known foreign origin other than Canada, and not formally determined by the secretary of agriculture to be unadapted to general use in the United States, will be colored approximately one per cent green.

5. Imported red clover seed, formally determined by the secretary of agriculture to be unadapted to general use in the United States, will be colored approximately ten per cent red. The same coloring is required for imported red clover seed of unknown origin.

6. Red clover seed from Canada will be colored approximately one per cent violet.

Control for Corn Smut

Symptoms.—Smooth, boil like outgrowths with a silvery membrane on any part of plant, especially the buds at nodes on lower part of stalk. Tassel and silk especially susceptible. Enveloping membrane eventually bursts, liberating black mass of spores. Disease carried over on litter in field or to field in manure from stock fed on diseased plant.

Control.—Crop rotation. Destruction of litter in field. Avoid applications of infested manure. Frequent inspection of growing fields during summer. Destruction (burning) of all smut masses before membrane breaks. Proper field selection of seed corn.

Bean Diseases

Anthracnose

Symptoms.—Rusty, round sunken spots with reddish border on stems and leaves (more noticeable on pods). Disease penetrates to seed, producing black spots on them. Carried in and on the seed and on refuse left in field.

Control.—Careful seed selection. Often necessary to obtain seed from regions free of the disease. Crop rotation. Produce home-grown seed crop by planting seed July 15 to August 1. Seed matures in fall and is free of anthracnose in this latitude.

Bacterial Blight

Symptoms.—First appears as irregular, water soaked areas on leaves. These become brownish, dry, and papery. Similar spots on pods resulting in their destruction. Penetrates pod and infects seed.

Control.—Destruction of refuse left in field. Crop rotation. Careful seed selection. Longfellow Bush, Extra Early Red Valentine, Refugee 1000-1, Tennessee Green Pod, Kentucky Wonder Wax are resistant bush varieties. Resistant pole varieties include Kentucky Wonder and Texas Pole.

Treating Oats for Smut

Mix 1 pint of 40% formalin with one pint of water and put the mixture in a hand spray pump. Shovel the seed oats to be treated from one pile to another and have someone spray the oats with the formalin as they slide off the shovel. Work the plunger twice for each shovel of oats. One pint of formalin will treat about 30 bushels. Cover the pile of treated oats for from 3-5 hours, then sow immediately or store them in clean bags. The advantage of this over soaking the oats for 10 minutes in a solution of 1 pint of formalin in 30 gallons of water is that they may be drilled immediately.

How to Treat for Cabbage Diseases

Black Rot

Symptoms.—First appears as blackening of veins in patches along margin of leaf. Blackening spreads along veins to midrib and into stem. Finally entire plant involved. Leaves wilt, turn yellow, and fall. Vascular system discolored (black) in stem. Disease persists in soil from preceding crops and on litter left in field; also seed borne.

Control.—Crop rotation. No cabbage, collard, rape, etc., for five years. Avoid manure resulting from diseased feed. Seed treatment recommended. Soak seed five minutes in formaldehyde (1 pint of formaldehyde to 30 gallons of water). Use new soil and new seedbed each year.

Clubroot

Symptoms.—Yellow leaves, failure to head. Enlarged roots. Disease is carried over in the soil.

Control.—Apply lime to the soil and rotate crops.

How to Control Potato Diseases

Early Blight

Symptoms.—Dark brown, dead spots on leaves, showing concentric rings.

Control.—Spray with 4-5-50 Bordeaux mixture as soon as spots become evident.

Scab

Symptoms.—Rough, corky, irregular, scabby spots on tubers. Disease carried in seed potatoes.

Control.—Avoid alkaline soils or fertilizers. Treat seed in bushel lots for 1½ hours in mercuric chloride (corrosive sublimate), 4 ounces of mercuric chloride in 30 gallons of water.

Wilt

Symptoms.—Plants become yellow and wilt. Brown discoloration of stem tissue. Brown ring discoloration if stem end of tuber is cut.

Control.—Rogue diseased plants. Use certified or selected seed from disease-free fields.

Tipburn, or Hopperburn

Symptoms.—Dying and blackening of tips and margins of leaves.

Control.—Spray with Bordeaux mixture as for early blight.

Mosaic

Symptoms.—Evident only on foliage. Number of types of mosaic. Dwarfing of the plant, becoming more upright. Leaves and branches brittle, small areas, separated from the normal green of leaves, giving a puckered, mottled effect. Decrease number and size of tubers.

Control.—Use certified seed for planting. These seed have been rogued at intervals, during the growing season and are free of degeneration diseases.

Leaf Roll

Symptoms.—Upward rolling of lower leaves, becoming thicker and leathery. Plant dwarfed and rigid in appearance. Few tubers produced.

Control.—Same as for mosaic.

Quantity of Seed Required Per Acre

Alfalfa (drilled)	15-20 lb.	Corn (for silage)	9-11 qt.
Asparagus (or 5lb., ort oz. for 50 ft.		Cucumber (in hills)	12-15 lb.
Barley	8-10 pk.	Onion (in drills)	5-6 lb.
Barley and Peas	1-2 bu. each	Onion sets (drills)	6-12 bu.
Bean, pole (in drills)	10-12 qt.	Parsnips	4-8 lb.
Bean, field (small varieties)	2-3 pk.	Popcorn	3 lb.
Beet	4-6 lb.	Potato (Irish) average	10-14 bu.
Blue-grass	25 lb. (pure)	Radish (in drills)	8-10 lb.
Buckwheat	3-5 pk.	Rape (broadcast)	4-8 lb.
Cabbage	¾-1 lb.	Red-top (recleaned)	12-15 lb.
Carrots (for stock)	4-6 lb.	Rye (early)	3-4 pk.
Cauliflower	1 oz. for 1000 plants	Soybean (drills)	2-3 pk.
Celery	1 oz. 2000 plants	Soybean (broadcast)	1½ bu.
Field-pea (small varities)	2½ bu.	Spinach (in drills)	10-12 lb.
Lettuce	1 oz. for 1000 plants	Squash, bush (in hills)	4-6 lb.
Mangles	5-8 lb.	Squash running (in hills)	3-4 lb.
Melon, musk (in hills)	2-3 lb.	Sunflower	10-15 lb.
Melon, water (in hills)	4-5 lb.	Sweet clover	2-4 pk.
Millet, barnyard (drills)	1-2 pk.	Sweet-potato	1½-4 bu.
Millet, foxtail (drills)	2-3 pk.	Timothy	15-25 lb.
Millet, pearl (for soiling	4 lb.	Timothy and clover	timothy 10 lb clover 4 lb.
Oats	2-3 bu.	Tomato (to transplant)	¼ lb.
Clover, alsike (alone, for forage)	8-15 lb.	Turnip (broadcast)	2-4 lb.
Clover, mammoth	12-15 lb.	Turnip (drills)	1-2 lb.
Clover, red (on small grain in spring)	8-14 lb.	Vetch, hairy (drilled)	1 bu.; 1 bu. small grain
Clover, sweet (melilotus)	2 pk.	Vetch, kidney	⅝ pk.; 1bu. small grain
Clover, white	10-12 lb.	Wheat	6-9 pk.
Corn	6 qt.-1 bu		

Grade and Length of Drains

Size of Tile in Inches	Minimum Grade Per 100 Ft. in Feet	Limit of Length in Feet
2	.10	600
3	.09	800
4	.05	1600
5	.05	2000
6	.05	2500
7	.05	2800
8	.05	3000
9	.05	3500
10	.04	4000
11	.04	4500
12	.04	5300

These limits are based on perfectly laid tile, which is seldom achieved. The lay of the land, the nature of the earth, the occurrence of rocks and trees and other obstructions, the necessity of making detours, and other conditions all influence the theoretical limits of efficiency.

(*Continued on page* 8)

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Alberta Cluster Per bu.	$1.40
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Marquis Type Spring Wheat	$3.15

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Metcalf's Perfect Ensilage	$4.50
West Branch Sweepstakes	3.75
Lancaster County Sure Crop	3.85
Luce's Favorite	3.90
Virginia Eureka Corn	3.00
Improved Leaming	3.50
Golden Glow	3.50
Cornell No. 11	3.35
Longfellow's Yellow Flint	4.00
FANCY BARLEY	
6-Row Oderbrucker Per bu.	$2.20
2-Row Fancy Per bu.	2.25
MISCELLANEOUS	
Red Top, Heavy Seed Per lb.	$ .32
Best Orchard Grass Per lb.	.22
Kentucky Blue Grass Per lb.	.28
Winter Hairy Vetch Per lb.	.10
PEAS	
Canada Field Peas Per bu.	$3.85
WRINKLED PEAS	
Dark Pod Telephone Per bu.	$8.00
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Vick's Scarlet Globe Radish	lb. $ .75	Yellow Globe Danver Onions	lb. $1.50
Scarlet Turnip White Tip	lb. .75	White Globe Onion	lb. 2.00
Danver Half Long Carrot	lb. .90	Big Boston Lettuce	lb. 1.25
Chantenay Carrot	lb. .90	Long Green Cucumber	lb. 1.25
Golden Self Blanching Celery	oz. .40	Green Hubbard Squash	lb. 1.00
Snowball Cauliflower	oz. 2.50	Common Varieties of Spinach	lb. .25
White Spine Cucumber	lb. 1.00	Hollow Crown Parsnip	lb. .65
Detroit Dark Red Beet	lb. .75	Grand Rapids Lettuce	lb. 1.00
Golden Bantam Corn	bu. 6.50	Copenhagen Market Cabbage	lb. 2.50
Early Evergreen Corn	bu. 6.75	Danish Ball Head Cabbage	lb. 1.75

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More Crop Helps

(*Continued from page 6*)

Conditions that determine the size of the drains, particularly the mains (Elliott):

1. The depth of water to be removed in twenty-four hours over the area of the drainage system.
2. Rapidity with which the water is brought to the main, that is, the number, size, and fall of the laterals.
3. The existence of emergency surface drainage.
4. The texture and physical condition of the soil, that is, whether it is open and porous or dense and retentive.
5. The grade of the ditch.

Use dense, hard-burned tile. Water enters through the joints. Round or hexagonal shapes are best. An even grade is essential. Avoid tile smaller than three inches on low grades. Hill land may need drainage. Ditching plows are very useful. Carefully construct and protect the outlet. Depth in heavy clay, two to three feet. Depth in loam and sandy loam, three to four feet.

Number of Tile Per Acre

Number of feet of drain tile required per acre when placed the specified distances apart (Fippin).

20 feet apart	2180 feet
25 feet apart	1743 feet
30 feet apart	1452 feet
40 feet apart	1090 feet
50 feet apart	872 feet
100 feet apart	436 feet
150 feet apart	290 feet
200 feet apart	218 feet

How to Determine the Number of Plants per Acre

The question is often asked how many cabbage plants are required to set an acre where they are placed 3 feet each way.

It is very simple to figure this for any planting distance. The distance between the rows is multiplied by the distance between the plants. In the case of cabbage where it is set 3 by 3 feet, we would multiply 3 feet between the rows by 3 feet, the space between the plants in the row, giving us 9 square feet.

This figure is divided into 43,560 square feet (the number of square feet in an acre). Cabbage set 3 feet by 3 would give us, 4,800 plants per acre, assuming that the acre is full to the margin. The square acre contains little less than 209 feet on all sides.

Formulae for Chemical Weed Killers

1. Iron-sulfate solution:
   100 pounds of iron-sulfate to 50 gallons of water. Apply 50 gallons to the acre.
2. Copper-sulfate solution:
   12 to 15 pounds copper sulfate to 50 gallons of water. Apply 50 to 75 gallons per acre.
3. Sodium-chloride, or salt, solution:
   3 pounds of common salt to 1 gallon of water.
4. Sodium arsenite (a strong and dangerous poison)

Caustic soda (sodium hydroxide)	2 lbs.
or	
High-grade concentrated lye	3 lbs.
White arsenic (arsenic Trioxide)	4 lbs.
Water to make	1 gal.

Recommended Varieties of Garden Crops

Asparagus—Palmetto, Washington.
Bean, green snap—Stringless Greenpod, Refugee.
Bean, wax snap—Pencilpod, Brittle Wax, Refugee Wax.
Bean, green shell—Dwarf Horticultural.
Beet—Crosby's Egyptian, Detroit Dark Red.
Brussels sprouts—Long Island Improved.
Cabbage—Early Jersey Wakefield, Copenhagen Market, Danish Ballhead, Savoy, Red.
Carrot—Chantenay, Danvers.
Cauliflower—Snowball, Erfurt.
Celery—Golden Self-Blanching, Easy Blanching, Giant Pascal, Emperor.
Chard—Lucullus.
Cucumber—Davis Perfect.
Eggplant—Black Beauty, New York Purple.
Endive—Broad Leaved Batavian, White Curled.
Kale—Dwarf Scotch.
Kohl-rabi—Early White Vienna, Early Purple Vienna.
Lettuce, leaf—Grand Rapids, Prize Head.
Lettuce, crisp-head—New York or Wonderful, Iceberg.
Lettuce, butter-head—May King, Big Boston, Salamander.
Lettuce, romaine or cos—Paris White.
Leek—American Flag.
Muskmelon—Bender's Surprise, Emerald Gem, Hackensack.
Onion, green—Egyptian or Tree, White Set.
Onion, dry bulbs—Yellow Globe Danvers, Southport Red, Yellow and White Globes.
Parsley—Moss Curled.
Parsnip—Guerande or Hollow Crown.
Peas—Alaska, Gradus, Telephone.
Pepper, sweet—Bull Nose, Ruby King.
Potato—Early Rose, Irish Cobbler, Early Ohio, Early Six-Weeks, Green Mountain, Rural New Yorker No. 2.
Radish—Early Scarlet Globe, Hail Stone, Icicle, Long Scarlet Short Top.
Rhubarb—Victoria.
Rutabaga—American Purple Top or Long Island Improved.
Salsify—Sandwich Island.
Spinach—Bloomsdale, Long Standing, King of Denmark, New Zealand (for summer).
Squash, summer—Bush Scallop or Patty-pan.
Squash, winter—Hubbard, Delicious.
Sweet Corn—Golden Bantam, Early Crosby, Stowell's Evergreen.
Tomato—Bonny Best, Earliana, Globe.
Turnip—Extra Early Milan, Purple Top Strap Leaf, Golden Ball.
Watermelon—Fordhook Earl, Kleckley Sweets (late).

Measuring Corn in Bulk

Two cubic feet of sound, dry corn in the ear will make a bushel shelled. To get the quantity of shelled corn in a crib of corn in the ear, measure the length, breadth and height of the crib, inside of the rail; multiply the length by the breadth, and the product by two, and you have the number of bushels in the crib.

Rule for Estimating Hay

Hay is often sold in the mow or stack where the weight has to be estimated. For this purpose 400 cubic feet of hay is considered a ton. The actual weight of 400 cubic feet of hay will vary according to the quality of the hay, time of cutting, position in the mow, etc. For making an estimate in a given case multiply together the length, breadth and height of the mow or stack in feet and divide the product by 400. The quotient will be the number of tons.

Cover-Crops

A cover-crop is one that is grown for its effect as green-manure or protection, or otherwise, rather than for its value as a product of itself. Cover-crops are used:

1. To prevent the loss of soluble plant-food, which occurs when the lands are left uncovered during the late fall and winter;
2. To prevent the gullying or surface erosion of hillsides or slopes by winter rains;
3. To prevent root injury by excessive freezing of orchard lands;
4. To supply humus;
5. To improve the physical condition of the land.

Legumes which are used as cover-crops: red clover and Canada field-peas, alfalfa, soybeans, cowpeas, crimson clover, hairy vetch and spring vetch and sweet clover.

Non-legumes used as cover-crops: rye, wheat, oats and barley, of the cereals, are more commonly used; rape and turnips, which are not hardy in the northern sections; buckwheat, white mustard, and spurry under special conditions.

Some of the leading cover-crops mentioned or recommended for fruit plantations.

Living over winter: Clovers, hairy or winter vetch, sweet clover, winter rye, winter wheat.

Killed by freezing: Soybean, velvet bean, pea, bean, beggarweed, spring vetch,

rape, turnip, oats, barley, buckwheat, maize, millet.

Average quantities of seed per acre for heavy cover-crops in fruit plantations.

Barley	2-2½ bu.
Beans	1½-2 bu.
Beggarweed	5-8 lb.
Buckwheat	1½ bu.
Clover, red	10-15 lb.
Clover, mammoth	15-20 lb.
Clover, crimson	15-20 lb.
Cowpea	1½-2 bu.
Maize	2-3 bu.
Millet	1½ bu.
Oats	2-3 bu.
Pea	2-3 bu.
Rape	2-5 lb.
Rye	1½-2 bu.
Soybean	2-4 pk.
Sweet clover	10-12 lb.
Turnip	4 lb.
Velvet bean	1-4 pk.
Vetch	20 lb. to 1½ bu.
Wheat	2-2½ bu.

Alfalfa (20 to 24 lbs. to the acre) is sometimes used as a cover-crop in orchards being plowed a year from sowing or allowed to remain for a longer period. Various combinations or mixtures are also used: as mammoth clover, 6 lbs. alfalfa, 10 lb., turnip, 2 to 3 oz.; alfalfa, 6 lb., crimson clover 6 lbs., alsike clover, 3 lb., strap-leaf turnip, 2 to 3 oz., all sown in midsummer. Cowpeas in drills and cultivated, and rye, rape, or turnips added to the last cultivation. Winter vetch, 1 bu., rye, ½ bu. Cowpea, 1½ bu., red clover, 6 lb. Oats, 2 bu.; peas, 2 bu.

How to Get Shipping Point Inspection in New York State

1. The State Department of Farms and Markets is under no obligation to extend shipping point inspection at any particular point, but producers or groups of producers can make application to the Bureau of Markets, State Department of Farms and Markets, Albany, N. Y. In order that the work may be carried on successfully it is necessary that a steady and continued volume of inspection is insured so as to keep the inspectors occupied. The use of this shipping point inspection of shippers is entirely voluntary.

2. The advantages of shipping point inspection are that it decreases the risks of the shipper, prevents unjust reduction in terminal markets, faoilitates sales, opens new market outlets, aids collection on claims for loss and damage in transit and improves production methods by placing a premium on well grown products.

3. The official certificate is issued following inspection which gives the condition of the car, the average size, percentage of defects, method of loading and general condition of product and a statement as to whether it meets some standard U. S. grade. These certificates are receivable as evidence in both State and Federal courts as to condition of the product. Two copies of the report are furnished the shipper. One copy is filed with the State Department at Albany and one filed with the United States Bureau of Agricultural Economics at Washington. The Federal law provides that fees shall be charged such as will vary reasonably part of the cost. In the case of potatoes this cost is $4.00 per car.

How to Make Putty for Hot Bed Sash

Homemade putty for use on hotbed sashes and other places can be easily made by mixing the following.

One pint raw linseed oil, 5-8 pound white lead and 4 pounds whiting. Mix the lead and oil and stir in enough of the whiting to make a stiff dough. Pour this material on a board or other hard surface, which has been sprinkled with enough whiting to prevent the mixture from sticking. Knead the mixture just as though dough was being made, adding whatever amount of whiting is needed to give it the desired consistency. When made in this way, it will stay soft almost indefinitely if it is kept covered with water. Use this material to tighten up the glass on the hotbed sash. Clean up the frames and paint them, and their life will be considerably prolonged. Any good paint will do, a mixture of linseed oil and white lead paint being quite satisfactory.

How to Destroy Moles

Moles can be controlled by punching a hole about every four or five feet along the runway of the mole, dropping a teaspoonful of calcium cyanide in each hole. The fumes penetrate the runways and kill the moles. Close the openings with a wad of grass and put a layer of soil over the wad. This treatment can be made at any time of the day.

The above method with calcium cyanide can be used against rats, crayfish, etc.

It is claimed that castor beans planted at intervals in ground infested by moles will keep the pest away. Carbon disulphide poured into the holes, and the openings made for the purpose quickly stopped with a piece of sod, will kill the moles, as fumes will penetrate the most remote part of the runs.

More than twenty million forest trees were planted in New York state during 1926.

* * *

It is good practice to put lime on fall-plowed oat ground that is to be seeded with clover or alfalfa in the spring, if it is sour.

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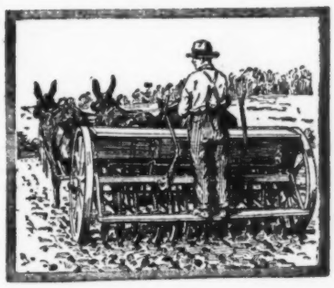

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What the Fruit Grower Wants to Know

How to Make Bordeaux Mixture

Bordeaux mixture is a liquid spray made by combining in proper proportions copper sulfate (blue vitriol or bluestone) and lime. The most common formula is copper sulfate 5 pounds, best grade quick-lime 5 pounds (or hydrated finishing lime 7½ pounds.), and 50 gallons of water. This formula is written as 5-5-50. If less or more copper sulfate or lime are used, various mixtures as 4-4-50, 6-6-50, 3-5-50, 5-10-50, etc., can easily be prepared. The first figure always represents the amount of copper sulfate and the second figure the amount of lime.

Stock Solutions of Copper Sulfate

When large quantities of Bordeaux mixture are to be applied, it is desirable to make stock solutions of the two ingredients. Wooden containers should be used, consequently wooden barrels are desirable. A barrel should be filled nearly full with water, and a record kept of the number of gallons. As many pounds of copper sulfate as there are gallons of water in the barrel are then placed in a loosely woven sack and suspended from a stick across the top of the barrel in the upper surface of the water. The warmer the water, the sooner the copper will dissolve. In fairly cold water it will dissolve in 5 to 12 hours. The copper sulfate crystals or powder should never be placed in the bottom of the container, for they will dissolve very slowly there. When all the crystals are dissolved each gallon of the solution will contain 1 pound of the bluestone. This stock solution will keep indefinitely if kept covered and the water of evaporation replaced.

Stock Solution of Lime

When a good grade of burnt lime or lump lime is available, this form of the lime is recommended. As many pounds of the lime as it will take gallons of water to fill the barrel or other container is slaked slowly by dipping water on it until the lumps fall apart into a powder. Enough water is then added to fill the container, so that the mixture will have 1 pound of the lime for each gallon.

If good lump lime cannot be obtained, hydrated lime may be used instead. The kind known as finishing lime is preferred. This needs no slaking, but is stirred into a paste with a little water, then two-thirds as many gallons of water added as there are pounds of the lime. This mixture must be stirred thoroughly every time it is to be used. These lime mixtures will keep as long as desired. Air-slaked lime or ground limestone are worthless for making Bordeaux mixture.

Mixing the Solutions

The bluestone solution and lime suspension should not be mixed together until they are to be used, for the Bordeaux mixture begins to deteriorate as soon as it is made. Another important precaution is that the two stock solutions should never be mixed without first diluting one or both. If enough 5-5-50 Bordeaux mixture is desired to fill a 50-gallon tank, wash through a strainer 5 gallons of the milk of lime with a stream of water until the tank is nearly full. Pour in slowly 5 gallons of the copper sulfate solution, stirring vigorously during the pouring. Enough water is added to complete the filling of the tank. If larger or smaller tanks are employed a correspondingly larger or smaller amount of the stock solution is used.

If very small amounts of the spray mixture are desired, 1 ounce of the copper sulfate is dissolved in 3 pints of water. In a separate container 1 ounce of lime is mixed with 2 pints of water, then one solution is slowly poured into the other, the whole being stirred vigorously during the process.

Apple Spray Schedule

Furnished by N. Y. College of Agriculture and approved by N. Y. Agriculture Experiment Station

TIME OF APPLICATION	SPRAY MIXTURES	ENEMY	DUST MIXTURES
DELAYED DORMANT When leaves of blossoms buds are out ¼ to ½ inch	Lime-sulfur, 11 gallons, lead arsenate, 2½ lbs.* nicotine sulfate, ¾ pint, water to make 100 gals.	Scab, scale, Blister mite, Bud Moth, Leaf-roller, Casebearers, Aphids	2% Nicotine dust for aphids
PRE-BLOSSOM When blossoms show pink or earlier if a rainy period threatens	Lime-sulfur, 2½ gals., lead arsenate, 2½ lbs.,* water to make 100 gals.	Scab, Green fruit worms, Bud Moth, Leaf-roller, Casebearers.	Apply 90-10 sulfur-lead arsenate dust†. 2% Nicotine as blossom buds begin to show pink for rosy aphis.
CALYX When last of the petals are falling	Lime-sulfur, 2½ gals., lead arsenate, 2½ lbs.,* nicotine sulfate, 1 pint, water to make 100 gals.	Scab, Codling moth, Green fruit worms, Bud Moth, Curculio, Lesser apple worm, Redbugs	Apply 90-10 sulfur-lead arsenate dust†. For red bugs, use 90-10 dust with 2% nicotine.
Later Sprays To be determined by weather conditions and control of scab	Lime-sulfur, 2½ gals., lead arsenate, 2½ lbs.,* water to make 100 gals.	Scab, Codling moth, Curculio, Lesser apple worm, Apple Maggot	Later applications with 90-10 sulfur-lead arsenate dust.†

*Double the amount of lead arsenate if paste form is used.
†Copper lime dust may cause russeting especially at the Calyx application. At this time use spray of 90-10 sulfur-lead arsenate dust.

Usual Distances Apart for Planting Fruits

Apples	30 to 40 feet each way
Apples, dwarf (Paradise stocks)	8 to 10 feet each way
Apples, dwarf (Doucin stocks)	12 to 25 feet each way
Pears	20 to 30 feet each way
Pears, dwarf	10 to 15 feet each way
Plums	16 to 20 feet each way
Peaches	16 to 20 feet each way
Cherries	16 to 25 feet each way
Apricots	16 to 20 feet each way
Grapes	8 to 12 feet each way
Currants	4x5 feet
Gooseberries	4x5 feet
Raspberries, black	3x6 feet
Raspberries, red	3x5 feet
Blackberries	4x7 to 6x8 feet
Cranberries	1 or 2 ft. apart each way
Strawberries	1x3 or 4 feet

The Farm and Garden Rule Book—Bailey.

How to Fight Peach-Tree Borers

(1) Smooth off the soil about the base of the tree, removing grass, weeds, leaves, and other foreign matter. Have the surface flat and smooth.

(2) Make a ring around the tree about two inches from the trunk. Place the crystals of paradicholobenzene on this ring around the trunk. Be sure the crystals do not touch the bark.

(3) Cover the ring of crystals with several shovels of dirt, free of weeds, grass and sticks, and compact the soil on top of the crystals with the shovel or hoe. The main thing is to see that the paradichlorobenzene is not disturbed when the soil is placed on it.

A dose of ¾ to 1 ounce per tree has been found effective on trees six years of age or older. If the trees are younger, reduce the dose. Real young trees should not get more than ½ ounce, and for only a short period. With old trees it is well to remove the crystals three or four weeks after the treatment has been made.

Pruning Currants and Gooseberries

Pruning of currants and gooseberries before the first of April is recommended by the State College of Agriculture, New Brunswick. This is because these plants start growth early in the spring.

Some fruit will be produced even if no pruning at all is done, but a systematic annual pruning will increase the size and amount of fruit, keep the plants more vigorous and prolong their lives. Gooseberries and currants produce fruit from lateral buds on one-year wood and on spurs on older wood.

The first step in pruning is the removal of all dead, injured, or diseased canes. The remaining canes should be thinned out by removing the older wood which is making very little growth, particularly any 4-year old or over, since it is relatively unproductive.

Canes which bend over so that fruit would touch the ground may as well be pruned off, especially on currant bushes, as it is very difficult to clean the fruit if it gets spattered with mud.

Weak 1-year old canes may be taken out, for they simply make the bush more dense, hindering spraying and picking without materially increasing production.

Most of the vigorous 1- to 3-year-old wood may safely be left on the bush.

Usually very little heading back is necessary although very long 1-year-old canes may occasionally be tipped back to encourage branching.

Recommended Tree Fruit Varieties

Apples—Commercial: Baldwin, Greening, Northern Spy, McIntosh, Cortland. Home Orchard and Local Market: Dutchess of Oldenburg, Alexander, Black Gilliflower, Tolman Sweet, Delicious, Rome Beauty, Tompkins King, Spitzenberg.

Sour Cherries—Early: Early Richmond, Montgomery. Late: English Morello.

Sweet Cherries—Bing, Black Tartarian, Napoleon, Windsor, Yellow Spanish.

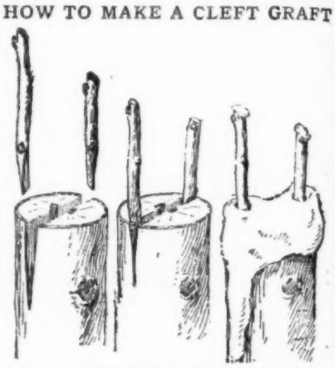
Peaches—Elberta, Early Crawford, St. John, Reeves.

Pears—Clapp's Favorite, Bartlett, Seckle, Beune Bros, Winter Nelis, Kieffer.

Plums—Abundance, Burbank, Bradshaw, Lombard, Italian Prune, Reine Claude, Monarch.

Quinces—Orange.

HOW TO MAKE A CLEFT GRAFT



Cleft grafting is used more than any other method to change the variety of fruit trees by top working.. It can be performed on young or old trees.. A sharp, clean cut is made, with a grafting knife. The cleft is then carefully cut into which the scions of the desired varieties are placed, so that the growing tissues come in direct contact. The entire wound is then disinfected and covered with a good grafting wax.

(Cornell Reading Course Bulletin 123)

Peach Spray Schedule

Furnished by N. Y. College of Agriculture and approved by N. Y. Agriculture Experiment Station.

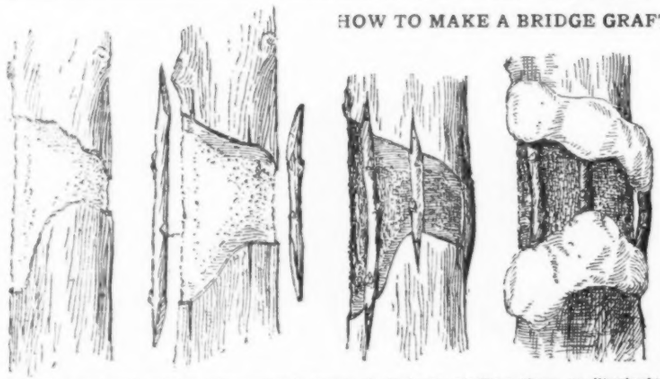
TIME OF APPLICATION	SPRAY MIXTURES	ENEMY	DUST MIXTURES
Late fall or early Spring, before buds swell	If scale is abundant lime-sulfur—11 gals., water to make 100 gals., no scale—use lime-sulfur, 6½ gals., water to make 100 gals.	San Jose scale, Leaf curl, Leaf curl	Dust not advised
When blossoms show pink	Sulfur-lime; dry mix	Blossom blight, Brown-rot	Apply 95-5 sulfur-lead arsenate dust
When shucks are falling	Sulfur-lime; dry mix and arsenate of lead* 3 lbs. in 100 gals.	Brown-rot, Scab, Curculio	Apply 90-10 sulfur-lead arsenate dust
Two to three weeks after shucks fall	Sulfur-lime; dry mix	Brown-rot, Scab	Apply 95-5 sulfur-lead arsenate dust
Two to four weeks before fruit ripens	Sulfur-lime; dry mix	Brown-rot, Scab	Apply 95-5 sulfur-lead arsenate dust

*The amount of arsenate of lead is given for powder form; if paste form is used, twice as much is required.

Dry Mix Sulfur-Lime is prepared as follows:
Superfine Sulfur 16 lbs.
Hydrated Lime 8 lbs. } For 100 gals.
Calcium Caseinate 1 lb.

Mix the materials dry then add to the water in the spray tank while agitator is running.

HOW TO MAKE A BRIDGE GRAFT



Field mice and rabbits often attack young fruit trees girdling them as illustrated on the extreme left above. This injury destroys the tree unless the injury is bridged. The second illustration shows how the edges of the wound have been smoother and incisions made preparatory to taking the scions. The next illustration shows the scions inserted so that the growing tissue come in direct contact, the scions being held in place by very fine brads. The last illustration shows the scions covered by grafting wax, permitting the tree to continue in its development.

(Cornell Reading Course Bulletin 123)

Recommended Small Fruit Varieties

Red Raspberries—Early June, Marlboro, Perfection. Late Cuthbert-Herbert.

Black Raspberries—Early: Eureka, Kansas. Mid-season: Diamond. Late: Gregg.

Purple Raspberries — Columbian, Schaffer.

Strawberries—Varieties marked (*) are imperfect. Senator Dunlap, Chesapeake, Warfield (*), William Belt, Glen Mary (*), Stevens Late Champion, Everbearing: Progressive, Superb.

Grapes—Early: Moore's Early. Late: Concord, Sheridan, Catawba, (Red), Niagara (White), Delaware (Red), Worden.

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Blackberries—Early: Agawam, Eldorado. Mid-season: Erie, Snyder, Briton. Late: New Rochelle.

Dewberries—Lucretia.

Gooseberries — Downing, Pearl, Josselyn.

Currants—Red: Cherry, Fay, Perfection. White: White Imperial, White Grape.

Waxes for Grafting and for Covering Wounds

Common Resin and Beeswax Waxes

1. A standard and reliable wax is as follows:

Resin, 4 parts by weight
Beeswax, 2 parts by weight
Tallow (rendered), 1 part by weight.

Melt all the ingredients together, exercising care to avoid boiling. Pour the hot liquid quickly into a pail of cold water. With greased hands flatten the spongy mass beneath the water so that it cools uniformly. Permit it to get cold and tough, but not brittle. Remove from the water and pull until ductile and fine in grain. Lumps in wax are common, and are due to improper handling. If too lumpy, remelt and pull again. Make into balls or small skeins and put away in a cool place. When wanted soften with heat of hand or in hot water. It can be kept for years. One of the best waxes, either for indoor or outdoor use.

If a softer wax is desired, more tallow in proportion should be added. The addition of more beeswax makes the wax tougher. By thus changing the amount of the different ingredients a wax for almost any purpose can be secured.

HOW TO PRUNE CORRECTLY

The cut at the right shows the result of incorrect pruning. The stub dies, rot sets in, working into the inner tissues of the tree, making a harbor for rot and decay.

At the left is shown the result of correct pruning. The limb has been taken off close to the trunk. The surface has been properly trimmed with the result that the new growth soon grows over the wound which has been protected from decay by disinfectants.

(U. S. D. A. Farmers' Bulletin 181)

Waxes for Grafting and for Covering Wounds

The following wax, which is slightly softer, may be applied more conveniently in cold weather:—

Resin, 4 parts by weight
Beeswax, 2 parts by weight
Linseed oil, 1 pint

Melt all together gradually, turn into cold water and work as above. On account of the impurities contained in linseed oil, its use is not recommended for grafting wax. In general the tallow is to be preferred.

Alcoholic Wax

The alcoholic or liquid wax is a thick paste. It is useful for work in winter when the resin wax can not be applied; and also for covering the wounds where bark has been injured or removed, and for bridge grafts. Lefort's liquid wax:—

White resin, 1 pound
Beef tallow, 1 ounce
Turpentine, 1 tablespoonful
Alcohol, 5 ounces

Melt the resin slowly. When hot, add the beef tallow. Remove from the fire and add slowly, stirring constantly, the turpentine and alcohol. Keep in closed bottles or cans. Use a brush or swab to apply.

HOW TO REMOVE A LARGE LIMB

At left cut shows results when a large branch is improperly removed. The weight of the branch causes a premature breaking and tearing of the growing tissue.

To avoid this condition make cuts as illustrated below. A is an under cut followed by B an over cut, a few inches outward from A. This leaves a small stump which can be removed without any harmful effects.

(U. S. D. A. Farmers' Bulletin 181)

Waxed String and Bandages

1. Waxed bandage. Waxed bandages are very useful for covering wounds where the bark has been broken or injured. They are prepared as follows:

Old cloth is torn into strips of the desired width and the strips wound into balls, or bandage cloth, (not gauze) may be used. These balls are placed in the kettle of melted resin wax. In a few minutes they will be thoroughly saturated, when they should be removed and allowed to drain and dry.

2. Waxed string for root-grafting. Into a kettle of melted resin wax place balls of No. 18 knitting cotton. Turn the balls frequently, and in a few minutes they will be thoroughly saturated. Remove from the kettle and allow to drain and dry, after which they may be put away for future use.

This material is strong enough and at the same time breaks so easily that it does not injure the hands. When the string is used, it sticks without tying.

(Additional fruit articles on page 14)

Grape Spray Schedule

Chautauqua Region

Furnished by N. Y. College of Agriculture and approved by N. Y. Agriculture Experiment Station

TIME OF APPLICATION	MATERIALS	ENEMY
Just as soon as the fruit has set Make special effort to place spray on the clusters This is a special berry-moth spray and can be omitted if the best is not present	Bordeaux mixture, 4-4-50 Arsenate of lead, 1½ lbs.* Resin fish oil soap, 1½ lbs.	Berry-moth Powdery mildew
When the root-worm beetles first appear in numbers	Same as above	Root-worm Berry-moth Powdery mildew
Ten days to two weeks later	Same as above	Root-worm Berry-moth Powdery mildew
When the maximum number of leaf-hopper nymphs are present, usually between July 12 and 20 During certain seasons this spray can be combined with the preceding	Nicotine sulfate, ¾ pint Resin fish oil soap, 3 lbs. or Hydrated lime, 8 lbs. Water to make 100 gallons	Leaf-hopper
Special rose chafer spray Apply as soon as the beetles appear	Confectioners glucose, 25 lbs. or cheap molasses, 2 gals. Arsenate of lead, 5 lbs. Water to make 100 gallons	Rose chafer

*The amount of arsenate of lead is given for the powdered form; if paste is used twice the amount is required.

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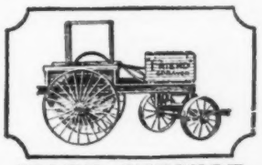


HARD SERVICE

For 10 and 12 years and still worth 25 to 40% of original value is the record of "Friend" sprayers reported by users.

They also say that with thorough overhauling at a very low cost, they are ready to give same service as when new for 6, 7 years or more.

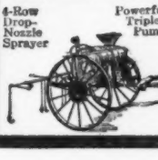
Are you interested in this kind of service?
If you are, mail a card today for details.

"Friend" Mfg., Co.
123 East Ave., Gasport, N. Y.

Bigger Spray Profits

Thorough spraying increases profits, blight or no blight. This Four-Row Drop-Nozzle Sprayer covers the entire plant, including both sides of the leaves with fog-like mist from 200 to 225 lbs. pressure.

IRON AGE



4-Row Drop-Nozzle Sprayer — Powerful Triplex Pump

If you grow potatoes, tomatoes or other sprayed crops, you need this efficient tool. We also make 2-wheel engine-driven Sprayers for field and orchard use, and 4-wheel Orchard Power Sprayers.

Write for Free booklets

Fred. H. Bateman Co.
624 Chestnut St.
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Catalog on Request

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Nurserymen and Fruit Growers,
WILSON (Niagara County) N. Y.
"The Home of Good Nursery Stock"

They doubled their hay crop every year for five years—

THAT'S the record they made at the New Jersey Experiment Station by top-dressing timothy with Sulphate of Ammonia.

Note the following figures as given out in "Field Experiments on the Availability of Nitrogenous Fertilizers" by Dr. J. G. Lipman and Professor A. W. Blair. They cover a five-year experiment.

Yield of Timothy Plots, Acre-Basis, 5-Year Total
Total dry matter

Without top-dressing ---------- 7,287 lbs.
Top-dressed with Sulphate of Ammonia (at the rate of 240 lbs. per acre) ---- 18,320 lbs.

An increase of 11,033 lbs. dry matter per acre—due to Sulphate of Ammonia! Why not try 100 to 150 lbs. of Arcadian Sulphate of Ammonia on your own hay? There's proof enough that top-dressing with Arcadian Sulphate pays in increased production.

Results prove the availability of the nitrogen in

ARCADIAN *Sulphate of Ammonia*

THE BARRETT COMPANY, AGRICULTURAL DEPARTMENT

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O-3-27

The Barrett Company (address nearest office)
Please send me sample package of Arcadian Sulphate of Ammonia. I am especially interested in _____
(Write name of crops on line above)
and wish you to send me bulletins on these subjects.

Name _____

Address _____

If Your Dealer does not handle

LE ROY PLOWS

Write LeRoy Plow Co., LeRoy, N.Y.

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SEEDS, — BERRY PLANTS — ORNAMENTALS

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FREE CATALOG

Lime and Fertilizer **Sower**

The Old Reliable *McWhorter* *Force-Feed*

SOWS broadcast or side-dresses rows of growing crops. Ask your dealer for McWhorter Distributors. *Write for folder showing many styles.*

No. 44 *Width 7 ft.*

Low-down Hopper *Hopper Capacity about 400 lbs.*

Bateman Brothers, Inc.
Dept. D 2015 Market St. Philadelphia, Pa.

Compare Crop Yield, Quality and Profit

Mapes Manures are first made to grow good crops—then priced as low as possible. The little additional cost is returned to you many times over in increased crops of better quality. Try Mapes this year. Compare the crop *yield*; compare the crop *quality*; compare the crop *profits* with the result from any other fertilizer you can buy. Mapes "costs little more—worth much more". Write for list of brands and prices. Mail coupon today.

MAPES Manures

cost little more—worth much more

[*Just Mail This Coupon Today*]

The Mapes Formula and Peruvian Guano Co., Dept. 10
270 Madison Ave., New York, N. Y.

Without obligating me in any way, please send me your list of crop brands and prices.

I use.....tons of fertilizer on the following crops: _____

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My name is _____

P.O. _____ State _____

Fertilizing the Land

The Value of Commercial Fertilizers

1. Fertilizers are used to balance the farm manure to supply the full needs of the plants.

2. Fertilizers reduce crop costs. Land rental, taxes, seed, and even labor are about the same whether the yield is high or low.

3. Fertilizers save feed bills by increasing the yields of silage and good hay.

4. Fertilizers increase soil humus by helping to grow more organic matter in the soil.

5. Fertilizers improve quality of all farm products where it is used.

6. Fertilizers are relatively low in price this year and farmers may do well to catch up their needs a little while the price is reasonably low.

How to Improve Permanent Pasture

Much permanent pasture cannot be cultivated. Where this is the case it can usually be improved by applying lime, fertilizer or manure. Where available farm manure applied, usually during the summer, gives good results. The cows do not graze this closely and it has a chance to start.

A ton per acre of ground limestone and 200 to 400 lbs. of acid phosphate usually causes a much better growth of grass. This can be applied at any time, but when the ground is frozen it will mix with the soil to a slight degree. Improvement is not usually noticed the first year.

There is little use in sowing grass seed until conditions are made favorable for their growth. When conditions are favorable, the grasses will usually come in of themselves. Where is seems advisable to seed a mixture of grasses the following are advised:

(1) Where the soil is naturally well stocked with lime and where red clover grows readily or where the suggested fertilizer treatment would insure red clover, use:

Seed	Amount per acre (pounds)
Timothy	4
Red clover	2
Alsike clover	2
Kentucky blue grass	2
Meadow fescue	2
Orchard grass	2
White clover	1

(2) In sections where the soils are not well stocked with lime, and where, even with liming, real success with red clover is questionable, use:

Seed	Amount per acre (pounds)
Timothy	4
Alsike clover	3
Redtop	2
Canada blue grass	2
Orchard grass	2
White clover	1

(3) In the central and southeastern parts of the State, especially on the red soils of the Lackawanna series and also generally at elevations of 1,500 feet or more, use:

Seed	Amount per acre (pounds)
Timothy	4
Alsike clover	3
Redtop	2
Rhode Island bent grass or sheep's fescue	2
Canada blue grass	2
White clover	1

Plant Food of Manurial Value Removed from the Land by Various Fruit Crops

Fruit	Lbs.	Nitrogen Lbs.	Phos. Acid Lbs.	Potash Lbs.
Apples	11,250	4.5	2.25	11.25
Pears	10,000	4	1	12
Plums	7,200	7	3.6	14.4
Peaches	4,950	4	2	9
Quinces	7,200	8	3.6	17.2
Raspberries	4,800	5.6	4.3	12
Blackberries	4,800	9.6	2.4	11
Strawberries	4,000	5.2	2	9.2
Currants	4,000	12	4.8	12
Gooseberries	4,000	6	2.8	8
Grapes	6,000	9	4.2	18

This manurial value may be applied to the land in many forms. Maynard gives the following formulas:

(a) For fruit trees over ten years of age (forty trees), varying in quantity according to the condition of the soil and crop, 250 to 500 pounds of fine ground bone, 100 to 300 pounds of sulphate of potash, 50 to 150 pounds of ammonium sulphate or sodium nitrate.

(b) Unleached hardwood ashes at the rate of one to two tons per acre and 500 pounds of fine ground bone.

(c) Four hundred to 600 pounds of South Carolina rock, ground fine, 100 to 300 pounds of sulphate of potash, 100 to 300 pounds of ammonium sulphate or nitrate of soda.

(d) Barnyard manure, 6 tons per acre.

A light application of a complete fertilizer of high analysis has been found worth while in old orchards in sod.

Efficiency of Spreading Manure by Machine and Hand

Treatment	Kind of grain.	No. of acres.	Time planted	Amount harvested	Loads manure per acre	Value of crop	Value of crop per acre
Manure spread with a spreader	Corn	10	May 5	620 bu.	5	$248.00	$24.80
	Oats	10	April 6	560 bu.	5	156.80	15.68
	Clover	10	April 6	30 tons	4	150.00	15.00
Manure spread by hand	Corn	10	May 4	500 bu.	5	200.00	20.00
	Oats	10	April 6	420 bu.	5	117.60	11.76
	Clover	10	April 6	21 tons	4	105.00	10.50
Crop raised without manure	Corn	5	May 6	200 bu.	none	80.00	16.00
	Oats	5	April 6	190 bu.	none	53.20	10.64
	Clover	5	April 9	7½ tons	none	37.50	7.50

What Is a Fertilizer "Unit"?

The term "unit" as used in the fertilizer industry means one per cent. in a ton, or 20 pounds. Thus acid phosphate having 16 per cent. of available phosphoric acid is said to have 16 units of plant food—phosphoric acid. A 5-10-5 fertilizer carries five per cent. of five units of ammonia, 10 units of phosphoric acid, and five units or five per cent. of potash, or is said to carry a total of 20 units of plant-food.

Manure Compared with Manure and Acid Phosphate

Treatment	Average Yield for 19 Years Corn bu	Wheat bu.	Clover lbs.
Manure	59	21	4300
Manure and Acid Phosphate	71	27	5400
Due to acid phosphate	12	6	1100

Amount and Content of Manure

The following table gives the plant food per ton of manure and the amount of manure and plant food produced per year by 1,000 pounds live weight animals:—

Animal	Constituent	Plant food per ton: Manure pounds	Potash pounds	Phosphoric acid pounds	Nitrogen pounds	Manure and plant food per 1,000 pounds live weight per year: Manure alone tons	With bedding tons	Nitrogen pounds	Phosphoric acid pounds	Potash pounds
Horse	Solid	1,632.2	3.91	4.88	8.06	....	....	....	....	....
	Liquid	367.8	5.47	trace	4.41	....	....	....	....	....
	Total	2,000.0	9.38	4.88	12.47	8.9	12.1	153	81	150
Cow	Solid	1,456.5	2.16	3.01	4.71	....	....	....	....	....
	Liquid	543.5	5.15	1.32	5.16	....	....	....	....	....
	Total	2,000.0	7.31	4.33	9.87	13.5	14.6	137	92	140
Sheep	Solid	1,200.0	2.74	5.52	7.80	....	....	....	....	....
	Liquid	800.0	16.90	.23	13.44	....	....	....	....	....
	Total	2,000.0	19.64	5.75	21.24	6.2	9.6	175	88	133
Hog	Solid	1,290.3	5.72	5.93	7.74	....	....	....	....	....
	Liquid	709.7	7.07	.90	2.12	....	....	....	....	....
	Total	2,000.0	12.79	6.83	9.86	15.3	18.2	331	158	130
Hen		2,000.0	8.95	18.63	23.00	4.3	....	293	119	72
Calf		....	....	....	....	12.4	14.8	150	105	102

There Must be a Reason!

Look back a few years at a few typical North Atlantic states, . . . Vermont and Massachusetts, and New York.

In 1920, Vermont farmers used an average of 2.50% potash in their fertilizers . . . in 1925 this had been increased to 5.35%. In 1920, Massachusetts farmers used an average of 3.45% potash in their mixtures . . . by 1925 this had grown to 5.51%.

In 1920, New York farmers used an average of 3.24% potash in their mixtures . . . by 1924 this had increased to 5.19%.

There must be a reason! And the reason must be profit! Progressive farmers have found that *potash pays* . . . that's why they use more of it. Are you keeping in line with theseprofit-makers?

Do your small grains lodge . . . is your corn chaffy . . . do you fail to get a good stand of alfalfa, clover or hay . . . have you noticed small white spots on your alfalfa or yellowish brown ones on your clover? If so, your land is potash hungry and you can profitably use a higher per cent of potash in your fertilizer.

Feed your hay crops properly and save some of the dollars you now spend in feed. A few dollars invested in potash combined with other necessary plant foods may mean a big increase in your profit. Try it and see!

FREE—A new booklet, "Better Grains and Hay", is being prepared for the press. If you would like a free copy, write us and we will mail your copy as soon as published.

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New York's High-Analysis Factory-Mixed Fertilizers

The use of factory-mixed fertilizers may well be restricted to the following group of five high-analysis mixtures:

5-10-5
4-12-4
6-8-4
4-8-10
0-10-10

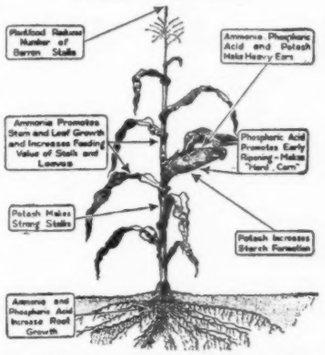
The 5-10-5 mixture is an all-round vegetable fertilizer for the market gardener or trucker on upland soils. It replaces the very popular 4-8-4, since it contains the same relative proportions of ammonia, phosphoric acid, and potash, but is 25 per cent more concentrated. The 6-8-4 should replace the 5-10-5 when a larger proportion of ammonia is needed, which is often the case in intensive vegetable crop production where little or no manure is used. Also, this 6-8-4 is the mixed fertilizer best suited for top-dressing timothy.

The 4-12-4 is recommended for field-produced vegetables, such as potatoes, cabbage, beans, and peas, as well as the grain crops, when a complete factory-mixed fertilizer is to be used. Its use is urged in addition to manure for tobacco. When applied to this crop it is very essential that sulfate of potash be used as the sole source of potash.

The 4-8-10 and 0-10-10 are strictly muck-land mixtures; the 4-8-10 is particularly suited for celery and the 0-10-10 for onions. For lettuce on muck, the use of equal parts of acid phosphate and 4-8-10 mixture gives excellent results.

What Plant Foods Do

Each of the Three Essential Plant Foods Plays an Important Part In Producing a Crop


Phosphoric Acid Promotes Early Ripening—Makes "Hard" Corn
Potash Increases Starch Formation
Ammonia and Phosphoric Acid Increase Root Growth

How to Prevent Lumping of Acid Phosphate

1. Where acid phosphate is purchased in bags, lumping can at least partly be prevented by proper handling and storing.
2. It should never be stored on a dirt or concrete floor.
3. Unless a dry, board floor is available, place boards or straw under the bags.
4. Never pile the sacked acid phosphate to any great height, as the weight on the bottom sacks may make it cake.
5. Where floor space will permit, it is better to set the sacks on end than to place them in a low pile.
6. An occasional shifting of the sacks will tend to lessen lumping.
7. Acid phosphate purchased in January and February should as a rule be more thoroughly cured than that bought late in the spring. Consequently, lumping may be lessened through purchasing early in the season. Where applied with the manure, lumping is after all no serious matter.

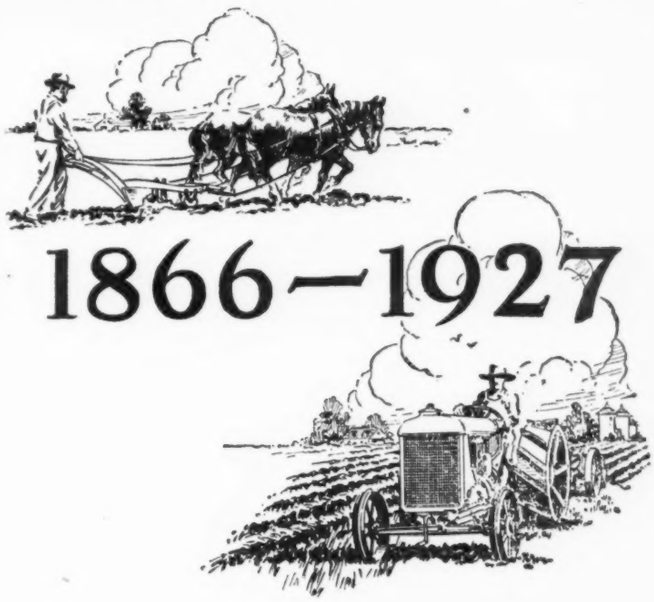
The Loss in Storing Manure

IT COSTS a farmer 53 cents on every ton of manure he lets accumulate in the barnyard, according to the Ohio Agricultural Experiment Station at Wooster.

Crop yields tell the story of the results of manure storage more clearly than a chemical test. In an experiment at the Ohio station, manure has, for 21 years, been applied to the clover sod in a three-year rotation of corn, wheat and clover.

On one series of plots, the manure has been hauled directly from the stall

(*Continued on page 14*)



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"AA Quality" Fertilizers are backed by a first, second and third generation of consistent, enthusiastic farmers—whose soils have been enriched, whose crops have been increased, whose profits have mounted into big money. "AA Quality" Fertilizers have "made good" in thesoil, yearafter year, for three generations.

Sixty years of continuous scientific research and manufacturing experience have been devoted to making "AA Quality" Fertilizers mean better crops and bigger profits. Thousands of practical tests on farms like your own have proved their unequaled crop-producing powers.

You can depend upon these reliable, time-tested crop-producers. Use them for all crops.

"AA QUALITY" FERTILIZERS

Manufactured only by

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Feed Your Soil
same as you feed your stock

Good soil responds with better crops when you fertilize it properly. At this season it will pay you to use Dold's Bone Fertilizer, Dold's Sheep Manure, or Dold's Blood Meal. Mix them, if preferred.

ALSO, give your baby chicks "something good" to grow on— Dold's Meat Scrap and Poultry Grit.

Write for Prices and Descriptive Matter

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We announce the greatest single advance in the preparation of MICHIGAN LIMESTONE. Now an accomplished fact, after months of research and experiment. We now pass "Michigan" through huge Rotary Calcinators. It is heated at 1200 degrees, opening up the grain, expanding the crystals, and decreasing the den-sity. We then can pulverize to greater, smoother fineness at 7,000 lbs. pressure, where it formerly required 18,000 lbs.

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Is the result of this process. The extreme purity of MICHIGAN LIMESTONE, combined with this advanced method of preparation, will give results in your fi-ld this Spring that will amaze you.

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The Loss In Storing Manure

(*Continued from page 13*)

to the field early in the winter. For another series of plots an equal weight of manure has been left in a pile in the barnyard for three months before it was spread on the field.

Stable manure produced 23 bushels of corn an acre, 10.5 bushels of wheat, and 1,363 pounds of hay; manure from the barnyard produced an average of 19.5 bushels of corn, 9 bushels of wheat, and 840 pounds of hay. Measured by the average value of crop increase, one ton of yard manure is worth $2.92, and one ton of stall manure, $3.45.

Losses of Manure from Exposure

Two lots of manure were exposed for a period of five months, April 25 to September 22, with the following results:

Amount	Kind	Loss in weight	Loss in value
4000 lbs.	Horse	2270	65%
10000 lbs.	Cow	4875	32%

To conserve manure, store it in a covered shed or watertight pit, or haul it directly to the field, and then spread it. If stored, it should be kept well compacted and moistened.

Recommended Varieties of Farm Crops

Oats

Cornellian, Medium stiff straw, highly rust resistant.

Empire-medium stiff straw. White kernel, heavy in weight.

Comewell—Similar to Empire.

Standwell—Stiff straw.

Selection 343—Recommended where exceptionally stiff straw is wanted.

Victory—

Winter Wheat

Honor-Beardless, heavy yielder, has stiff straw and is resistant to Hessian fly. Is susceptible to lose smut.

Forward—Tall, beardless, has white chaff and red kernels.

Junior No. 6—Somewhat susceptible to Hessian Fly.

Barley

Alpha—Two rowed, ripens about the same time as mid season oats and is good to grow with oats.

Featherston No. 7. Matures early. A six rowed variety.

Rye

Rosen—

Corn

Cornell 11—A yellow dent corn, matures in from 115 to 140 days. Should be planted by May 15.

Alvords White Cap Yellow Dent—One of the earliest maturing dent corns.

Onondaga White Dent—Kernels and cobs white. Somewhat similar to Cornell 11.

West Branch Sweepstakes—A very popular variety for silage in sections with medium growing season.

Luces Favorite—

Halls Golden Nuggett.

Pride of the North—A late maturing variety.

Eureka—Used for silage where a large volume of silage is wanted with few or no ears.

Effect of Tillage Vs. Sod Culture of Orchards

Although some growers have had wonderful success with apples in sod, tillage usually pays much better. The following comparisons were taken from 564 orchards in Orleans County:

	Average Yield Bus.	Average Income
Tilled 10 years or more	327	$182.
Tilled 5 years or more	274	138.
Tilled over half of preceding 5 years	226	113.
Sod over half of preceding 5 years	222	107.
Sod 5 years or more	204	108.
Sod 10 years or more	176	87.

A hydraulic ram will operate if the water delivered to it has a fall of at least three feet and flows at a rate of at least two to six gallons a minute.

* * *

The term unit as applied to fertilizer means one per cent or twenty pounds in a ton.

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Rats
Ants
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Woodchucks
Apple Aphis
Pear Psylla
Greenhouse Pests
Grape Leaf Hopper

and dozens of other destructive pests.

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Write for Booklet 166 which contains full information.

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DOES what no other transplanter ever did—guides the hands of the operators so that plants are spaced uniformly in drills or set exactly in checks. Sold with or without the Check-Row Attachment.

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Transplanter No. 502
with Check-Row Attachment

Wide-spaced crops, like Tomatoes can be accurately and easily check rowed, and cultivated both ways. All plants positively set in watered space. Transplant with ease, speed and uniformity. Write for free folder.
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626 Chestnut St.
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Philadelphia, Pa.

"They're Good For Many Years More" Says C. W. Benton

Carleton W. Benton, Lawton, Mich., has something to say about disk harrows which will interest you. He recently wrote us as follows:

"Thank you for your letter in answer to mine with reference to the weeder you manufacture.

"I have one of your 'Cutaway' Double Action Tractor disk harrows which was made before you made dust-proof boxes and the frame and disks are in excellent condition. I purchased the harrow second-hand and it had been given very poor care, yet not a disk was ever cracked or notched and while they are thin and sharp as a razor blade, yet they are tough and substantial and are good for many years of service. It is the best material I ever saw in any disk."

Clark CUTAWAY

Double Action harrows do a thorough and economical disking job because rear disks cut exactly half way between front disks and at same depth. Possible only with harrows constructed like the Clark "Cutaway." Light draft. Turns corners easily. Disks (Cutout or Solid) of cutlery steel, forged sharp for better work and longer service. Several sizes in tractor and horse-drawn models. Free: Valuable illustrated book, "The Soil and Its Tillage," and catalog of tillage implements. Mail coupon.

The Cutaway Harrow Company
75 Main St., Higganum, Conn.

Please send me FREE catalog and book, "The Soil and Its Tillage."

Name .....

Address .....

When writing to advertisers be sure to mention the American Agriculturist

Liming the Land

Some Facts About Lime and Liming

1. Most Eastern soils are acid and respond to lime.

2. If you are not sure whether or not your land needs lime, get in touch with your county agricultural agent or with your State College and they will tell you without cost how you can test your soil for acidity.

3. Few or none of the legumes such as alfalfa or clover will grow in an acid soil and every farmer knows that a legume sod is the basis of good farming.

4. Many other farm crops in addition to the legumes do better in a sweet than they do in a sour soil.

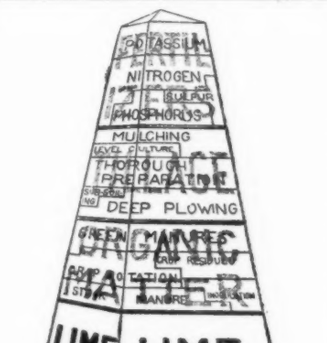
5. Lime can be supplied to the soils through the use of different materials containing the sweetening element. The material to buy depends upon the per cent of neutralizing agent and cost delivered at your station.

Increase Returns from Fertilizer

6. Better results will be had from commercial fertilizers and from farm manures where lime is used also.

7. Lime can be applied either as a top dressing or on the plowed field. It is good for the lawn, garden and orchard as well as for the field crops. It should be spread evenly, by a lime spreader, if possible, and in most cases is best applied after plowing and before seeding. Because it encourages the growth of potato scab if it is used in the rotation with potatoes, it should be applied immediately after that crop rather than before or with it.

8. Lime has well been called the "wizard of agriculture" because of the wonderful effects which follow its use on many soils. If you are not familiar with what it will do for you, give it a trial.



This diagram represents the essential factors in a fertile soil in the order in which they should be adjusted, beginning at the base.—Cornell Reading Course Bulletin.

What Kind of Lime to Buy

It is usually advised to buy the kind of lime that will deliver the most calcium on the farm for the least cost. Three-fourths of a ton of hydrated lime or half a ton of quicklime have approximately the same value as a ton of ground limestone. However the quicklime is most costly, the hydrated next and ground limestone has the lowest cost. Where near a station ground limestone is probably the most economical buy. Where there is a long haul some other form of lime may be advisable. The problem is one that must be figured out for each farm.

Kinds of Lime

Ground Limestone—This is the natural rock that is quarried and ground. The finer it is the more rapidly it works. The usual standard is that over half should pass a fifty mesh to the inch screen and that 90 per cent should pass a twenty mesh screen. Grinding it finer costs more than the extra benefit is worth.

Marl—Marl has the same chemical composition as limestone. It underlays some swamps and where available it may be dug out and dried. It is not used much except locally. It is not worth more per ton than ground limestone.

Quicklime or Burned Lime—This is made by heating ground limestone to a high temperature. It has about twice as much calcium per ton as limestone. It cannot be stored very well as it swells when moisture gets to it. It is economical if it must be hauled long distances.

Hydrated lime—This is made by adding water to quicklime. 1500 pounds of it contain as much calcium as a ton of limestone. It is more expensive than ground limestone. It is less caustic and better to handle than ground burned lime but is more disagreeable to handle than ground limestone.

Results from the Use of Lime

Benefit from the use of lime has been secured in every county in the State, and the results can normally be brought to light by inquiry through the local farm bureaus. A summary of the results from 163 field-demonstration records (mostly from the southern counties of New York state) of the use of lime materials of all kinds in different amounts, reveals an average increase in the yield of hay of 1762 pounds a year; the averages in different counties ranged from 753 to 4129 pounds. The effect of the lime continues for a long period of years, following the application of lime, the increase in yield of hay in the first cutting in the second rotation from the use of 1800 pounds of limestone was 1921 pounds.

How to Test Soil for Acidity

Secure sensitive Litmus paper. (This may be secured from the Soils Department of the State College at Ithaca or may be purchased at a drugstore). It should be sensitive enough so that it will turn pink if held tightly between one's moist fingers. Buy an ounce or two of potassium nitrate and dissolve as much as will dissolve in a small amount of water. Take a handful of soil to be tested, moisten with the potassium nitrate solution, make the soil into a ball, divide it and put a strip of litmus paper between the halves. Leave it for about thirty minutes. If the paper turns pink it indicates a need for lime.

The need of a soil for lime can be also detected by the failure of legumes and the presence of weeds such as devils paint brush, sorrel, ferns, etc.

The Lime Need of Crops

The crops that need the most lime are placed first in each group, while those that are more tolerant of acidity are placed in order, with those needing the least lime at the end of the list.

Legumes	Cereals	Grasses
Alfalfa, Sweet Clover	Barley	Kentucky Blue Grass
Red Clover	Corn	Timothy
Alsike	Wheat	Canada Blue Grass
White Clover	Oats	Redtop
Soybeans	Rye	Rhode Island
		Dent Grass
Cow peas		
Vetch		

Regulations for Selling Vinegar

1. Inasmuch as hard cider contains about 4% of alcohol it comes within the meaning of the National Prohibition Act. However any person may take apples to a custom mill and have them made into cider and after the cider is made the beverage must be used exclusively in the home. The cider may be sold at any time to persons having permits to make vinegar.

2. Persons producing cider containing ½ of 1% or more of alcohol intended for sale in quantities of 5 gallons or more to vinegar makers are required to obtain a permit under the National Prohibition Act and to file a bond.

3. Cider in the home may be allowed to turn to vinegar provided no sugar or fermentable substances are added to increase the alcoholic content, and he may sell the vinegar to anyone who desires the purchase of it. In addition to the 4% acetic acid requirement the New York State law prohibits the addition of drugs, or coloring matter to vinegar.

4. Every producer of vinegar shall plainly label each container of vinegar with his name, the place of business, the kind of vinegar, the substance or substances from which it is made. Where vinegar contains more than 4% acetic acid water may be added to bring the acidity down to 4%, but the package must be marked reduced to blank per cent strength.

66% more actual lime with SOLVAY

Get the most *for your* limestone dollar

Here's how—when you buy lime you are really buying lime oxide (its active chemical property), and this is what you get:

For $125.00 you can buy, on an average, delivered to your station,
25 tons Solvay Pulverized Limestone containing 12½ tons of lime oxide, or
9 tons Burnt Lime containing 7½ tons lime oxide, or
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Unit Stall and Curb Clamp save installation expense. Giant Stanchion keeps cows safe. New Rust Shield doubles life of stall.

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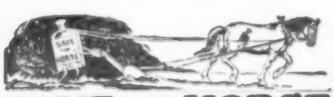

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Facts About TB

Why TB Should Be Eradicated

A public health measure. Scientific investigation has definitely established the fact that bovine tuberculosis is transmissible to humans, especially to children under five years of age. The only difference of opinion seems to be in the methods of transmission and the extent of human tuberculosis directly traceable to infection from animals. It seems that children are most susceptible, and the principal source of infection is through the drinking of milk from tuberculous cows.

An economic measure. It is conservatively estimated that bovine tuberculosis costs the stock breeders of the United States $40,000,000 annually. There are many ways in which it operates financially against owners of live stock. Briefly stated, they are as follows:

1. By destroying cattle outright, as when tuberculosis is allowed to reach its full development and results in the death of its victim.
2. By reducing the market value of the animal, as in those cases in which the animal is sold before the disease has reached such a stage as to render it entirely unmarketable.
3. By reducing the breeding value and general productivity of a herd.
4. By causing a waste of cattle food fed to animals that cannot give an adequate return.
5. By infecting animals, such as calves, swine, and other cattle, through the milk and by direct contact.
6. By injuring the reputation of the herd, thereby rendering it difficult to dispose of the animals or their products.
7. By destroying the enthusiasm, or interest, of the breeder in maintaining his herd at a high standard.
8. It is a known fact that the producing life of a dairy animal infected with tuberculosis is often cut in half. In a number of instances the animal, on an average, dies before the eighth year. On the contrary, in herds that are free from tuberculosis the producing life of an animal is up to the twelfth year, at which age it may often be fattened and profitably marketed for meat.

Why the Township-Area TB Test Is Advised

1. Cattle are tested more thoroughly.
2. More cattle are tested in a given time.
3. Cattle are tested at a lower cost per head.
4. Prompt appraisals, and a minimum amount of travel by the appraiser.
5. Reactors are promptly removed from farms, and are easily assembled for shipment by rail.
6. Premises are quickly and thoroughly disinfected with a power sprayer which is maintained in the township while the work is in progress.
7. Replacements are easily obtained from nearby herds, found in many instances to be free from tuberculosis.
8. Retest of infected herds made on time—not less than 60 or more than 90 days from date of last test—and clean herds accredited at expiration of one year from date of first clean test.
9. Danger of reinfection reduced to a minimum when all cattle in township are tested.
10. Buyers are attracted to areas where all cattle are known to be free from tuberculosis.
11. A future possibility is that distributors of milk will pay a premium for milk that can be shipped from areas where all cattle are free from tuberculosis.

How to Get Animals Tested in New York State

Those desiring to place their herds under state and federal supervision must sign the Accredited Herd Agreement, which is kept on file in the Department of Farms and Markets. The signing of this agreement binds the signer to follow all rules and regulations of the Accredited Herd Plan. Agreements are available at each farm bureau office or will be sent upon application to the Department of Farms and Markets, Albany, N. Y.

The signing of the agreement does not assure the owner of an immediate test. Initial tests are made by the township-area plan. In an organized county the first township wherein at least 90 per cent or more of the owners of live stock have signed the accredited herd agreement is the township selected for testing. The amount of infection is also considered in the selection of the townships.

All reacting animals must be segregated at once. This means keeping them entirely separate from those passing the test. All reacting animals should be kept on their usual rations. This will insure their being in good condition when appraised, the owner thereby securing the highest salvage obtainable.

All herds revealing reacting animals are retested within not less than 60 days or more than 90 days. This procedure is repeated until the herd passes a clean test. At the expiration of one year from the date of the first clean test, an accrediting test is applied and if successful the owner is given an Accredited Herd Certificate.

The policy of the Department of Farms and Markets is to retest all infected herds in not less than 60 or more than 90 days from the date of the last test. The triple combination test is recommended for such herds as show no improvement. These retests are continued until a clean test is obtained. Clean herds are not tested again until the expiration of one year.

How the TB Test Is Made

There are four methods of applying the tuberculin test to cattle. The first test is spoken of as the Subcutaneous, commonly called a Temperature Test. In this test the tuberculin is injected under the skin, usually in the region of the shoulder, and the animal's temperature is carefully recorded at short intervals for several days. Healthy animals are not affected by this test, but animals having tuberculosis suffer a marked and characteristic rise in temperature.

The second test is known as the intra dermic and is popularly known as the tail test. In this test a small amount of tuberculin is injected in a fold of the skin near the tail. Tubercular animals react to this with a pronounced swelling at the point of injection.

The Ophthalmic, commonly called the eye test, is made by putting a small amount of tuberculin into the eye of the animal. Diseased animals react with slight discharges from the eye.

At times various combinations of these methods are used, due to the fact that at rare intervals an animal will react to one test but fail to react to the others.

The work of TB eradication has been speeded up by the adoption of the Tail test, due to the fact that it is possible for a veterinarian to test a far greater number of animals in the given amount of time that the Temperature Test is used.

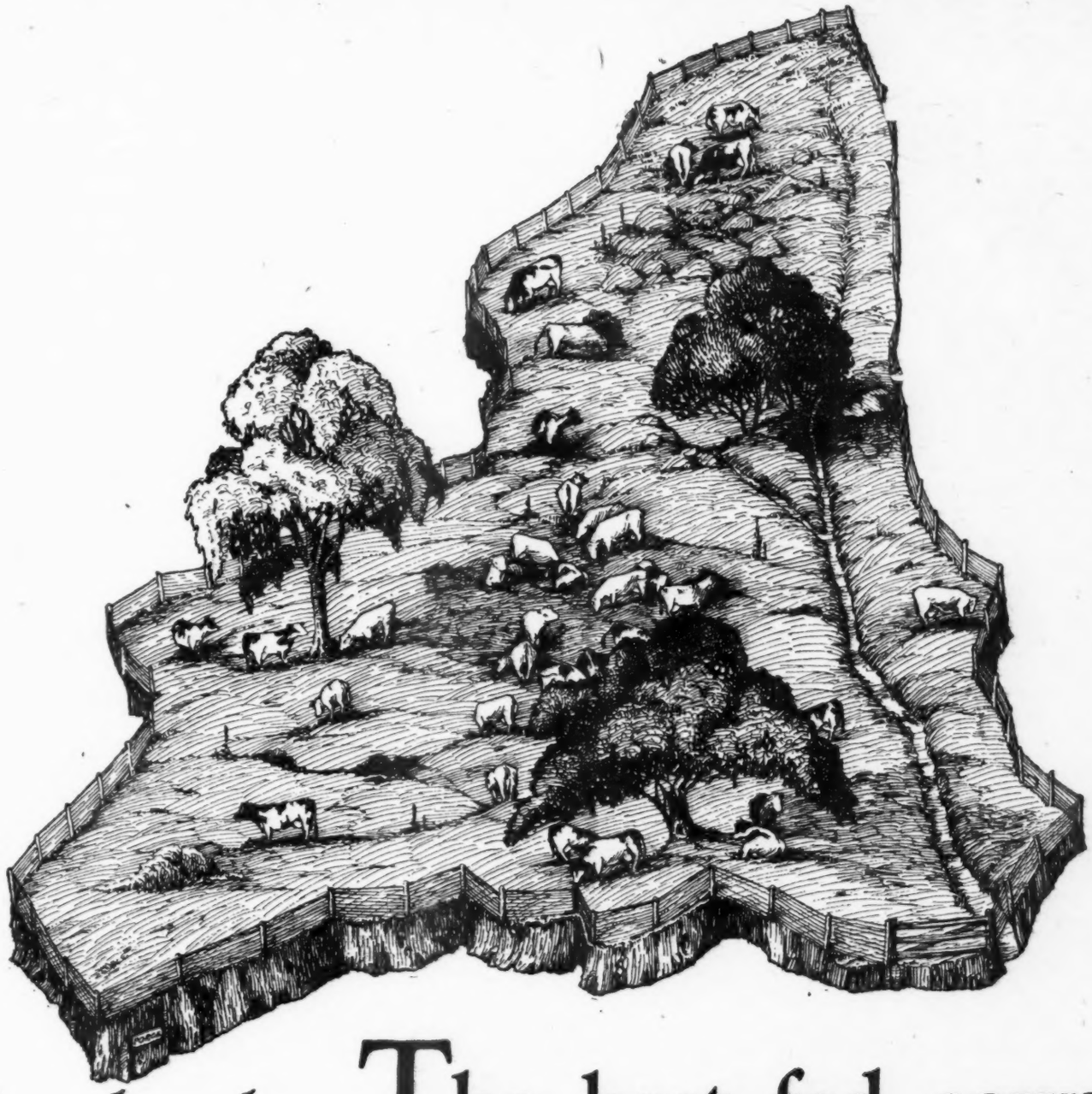
What Is Tuberculin?

Tuberculin is a product prepared by sterilizing, filtering, and concentrating the liquid upon which tubercle bacilli have been allowed to grow. It contains the cooked product of the growth of the bacilli, but not the bacilli themselves, and is used in several forms for the diagnosis of tuberculosis in animals. It was first made and studied by the great scientist, Robert Koch, who found in 1890 that if he injected it into the tissues of a tuberculous animal it had the effect of causing a decided rise of temperature,

(*Continued on page 18*)

TABLE A—HOW INDEMNITIES ARE DETERMINED IN NEW YORK STATE

Tag number	Description: Breed—pure bred or grade	Sex	Appraisal	Salvage paid	Difference	Amount Due From—United States	Amount Due From—N. Y. State
1001	Grade	Cow	$60.00	$5.00	$55.00	$1.00	$54.00
1002	Grade	Cow	60.00	10.00	50.00	None	50.00
1003	Grade	Cow	35.00	None	35.00	3.50	31.50
1004	Pure bred	Cow	120.00	10.00	110.00	2.00	108.00
1005	Pure bred	Cow	110.00	10.00	100.00	1.00	99.00
1006	Pure bred	Cow	130.00	25.00	105.00	None	105.00
1007	Pure bred	Cow	250.00	40.00	210.00	50.00	112.50
1008	Grade	Cow	100.00	10.00	90.00	22.50	67.50



The best fed cows in AMERICA are in the NEW YORK MILK SHED

A COW to be profitable in commercial milk production must milk generously, breed regularly, and live long. To do these things, she must be fed right. Right feeding will not take place by accident. There must be a system of buying feed which takes advantage of the best and lowest-priced ingredients in the world's market, so that the feed which goes to the cow costs as little as possible.

Then, there must be a method of using these ingredients so as to bring out the full possibilities of each one and to fully protect the health, breeding, and producing abilities of the cow that eats them.

The G. L. F. performs both of these services for its patrons. Through it 20,000 farmers are protecting their milk market by becoming the best and most economical feeders of dairy cows in America. If you are not one of the 20,000 see your G. L. F. agent today.

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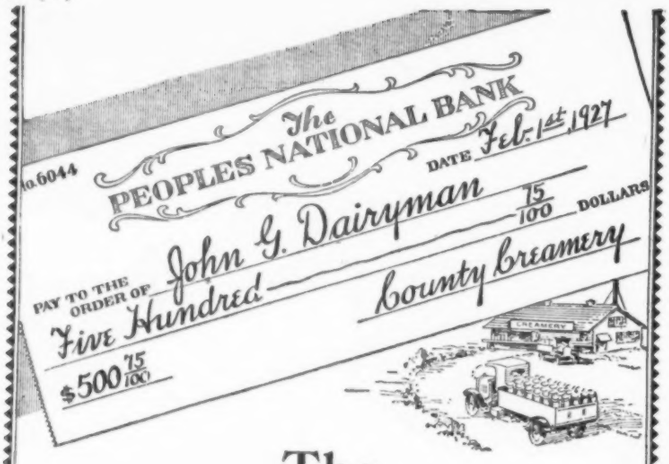

The size of the milk check depends upon the feed

YOUR milk profits depend on what and how much you feed your cows. The grain ration is the milk producer and you can't afford to feed any but the best. Union Grains—the first dairy feed—has been making milk records for years. Thousands of dairymen use Union Grains and will not feed anything else because it keeps their herds producing milk profits.

Union Grains is a dry, bulky grain ration, easy to digest—doesn't pack in the cows' stomachs. It is high in digestible proteins and low in fiber and moisture content. Fed by weight, and not by measure, Union Grains goes farther than any other grain feed. Its bulky Corn Distillers' Dried Grains is the element that means easy and complete digestion, better health and more milk. It is the one feed that contains in itself *all* the variety the cow needs and wants.

Plan for tomorrow as well as for today. Feeds high in proteins are easy to get but they are not always safe. Only when a feed gets its proteins from a combination of grains is high proteins safe. Union Grains is a safe feed. Give it a fair trial. It has made milk records for others—it will do the same for you. Keep a record of milk production on the free Ubiko Milk Record Cards you can get from your dealer or by writing us.

Remember, it's not how cheap but how much milk a feed will produce that counts on the profit side of the ledger. Feed Union Grains.

UNION GRAINS
is composed entirely of Corn Distillers' Dried Grains, Choice Cottonseed Meal, Old Process Linseed Meal, White Wheat Middlings, Winter Wheat Bran, Hominy Meal, Corn Gluten Feed, Brewers' Dried Grains, one-half per cent of fine Table Salt—and nothing else.

Analysis
Protein—not under 24%
Fat—not under 5%
Fiber—not over 10%
Quality in Feed is Economy in Feeding

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ONLY $35
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Ready to start soon as uncrated—Comes complete with 2 HP engine or electric motor. No extras to buy—No installation cost. Saves hours of work—equal to four milk hands.

Milks 2 to 4 cows at a time—clean—convenient. Milks just like the human hand—Easy on cows. 10 year guarantee. Used and endorsed by hundreds of dairymen and farmers.

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Facts About TB

(*Continued from page 16*)

while it had no such effect upon animals free from tuberculosis.

Tuberculin does not harm healthy cattle, even in large doses, but on diseased animals it produces a marked effect.

How Reactors Are Appraised in New York

The law provides as follows with regard to appraisers and appraisals of animals:

"Appraisers. The commissioner may employ from time to time appraisers of condemned animals. The chief or any assistant veterinarian shall have all the powers of any appraiser of condemned animals under this article.

"Appraisals of diseased animals. Each animal directed to be slaughtered or taken over by the state to be kept segregated shall be appraised at the market value of such animal at the time of making the appraisal. If the value of a condemned animal as determined by the appraiser is not satisfactory to the owner, its value shall be determined by arbitrators, one of whom shall be appointed by the state appraiser and one by the owner. If they are unable to agree, a third arbitrator shall be appointed by them. The value determined by such arbitrators shall after approval of the commissioner be final. The arbitrator selected by the owner shall be paid by him. If a third arbitrator be chosen he shall be paid by the state not more than five dollars per day and necessary expenses. Appraisers of condemned animals and arbitrators appointed under this article may administer oaths and examine witnesses for the purpose of determining the value of animals to be appraised under this article.

"Certificate of appraisal. The appraiser shall execute and deliver to the owner of a condemned animal or his legal representative a certificate stating the value thereof. If such value was determined by arbitrators, there shall be attached to such certificate a statement of the value so determined signed by at least two of the arbitrators. The form of such certificate shall be prescribed by the commissioner."

Indemnity in New York

The state will pay as indemnity 90 per cent of the appraised value, not to exceed $67.50 for a grade animal or $112.50 for a registered pure-bred animal, such registration to have taken place before the date of appraisal.

If, upon the post-mortem examination, an animal is found not to have the lesions for which it was killed, the state will pay not to exceed $75 for a grade animal and $125 for a registered pure-bred animal.

The salvage proceeds derived from the sale of the carcass are paid directly to the owner by the purchaser and are deducted from the appraised value, becoming a part of the amount of indemnity due, the owner receiving from the state the difference between the appraised value and the salvage value up to $67.50 for a grade animal and $112.50 for a registered pure-bred animal.

The balance, if any, is paid by the federal government not to exceed $25 for a grade animal or $50 for a registered pure-bred animal. In no case can an owner receive indemnities from all sources—salvage, state and federal—in an amount exceeding the appraised value.

The method of computing indemnities is explained in Table A on Page Sixteen.

Owners of reactors resulting from tests made under clause "E" of the accredited herd plan by accredited veterinarians at owners' expense receive only state indemnity plus the salvage.

Federal Indemnity

Congress appropriates yearly a sum to indemnify partially owners of animals destroyed on account of tuberculosis. During the the past few years the amount appropriated has been $3,000,000, with an increase of about $250,000 for the fiscal year 1925. This is allocated to the various states cooperating with the United States Department of Agriculture in the eradication of bovine tuberculosis.

After the state indemnity has been paid, a copy of the claim is given to the federal authorities in order that they may determine whether or not any United States indemnity should be paid. If the state indemnity does not equal the difference between the appraised value and the salvage received in the case of any one or more animals, then federal indemnity is allowed. The federal indemnity is added to the state indemnity in such an amount as will make both indemnities equal the difference between the appraised value and the salvage received. However, the federal indemnity cannot exceed $25 for a grade animal or $50 for a registered animal.

No federal indemnity will be paid for any animal added to a herd within six months prior to condemnation, unless said animal was obtained from a herd that is under supervision for the eradication of tuberculosis.

No federal indemnity will be paid for tuberculosis steers or unregistered bulls.

Payment of federal indemnity will be allowed only when the tuberculin test has been conducted by a regularly employed county, state or federal veterinarian.

How Herds Are Quarantined in New York

After the cooperating forces have succeeded in tuberculin testing at least 90 per cent of all herds and as many more as possible, the remaining herds may be quarantined by the Commissioner of Farms and Markets under Section 76 of the Farms and Markets Law:

Section 76. **Quarantine on animals or premises.** The commissioner may order any animal or animals affected with communicable disease or which have been exposed to a communicable disease or which he believes to be suffering from or exposed to a dangerous communicable disease, to be put in quarantine and may order any premises or farm where such disease exists or shall have recently existed to be put in quarantine, so that no domestic animal be removed from or brought to the premises quarantined; and shall prescribe such regulations affecting animals, persons or property as he may deem necessary or expedient to prevent the dissemination of the disease from the premises so quarantined. Whenever ninety per centum of the herds of cattle in any town have been subjected to the tuberculin test for the purpose of ridding such herds of the disease known as tuberculosis, and the owner of any untested herd in such town refuses or neglects to have his herd tuberculin tested, then the commissioner may order the premises or farm on which such untested herd is harbored to be put in quarantine, so that no domestic animal shall be removed from or brought to the premises quarantined, and so that no products of the domestic animals on the premises so quarantined shall be removed from the said premises.

Indemnity in Pennsylvania and New Jersey

The maximum indemnity for tubercular animals in Pennsylvania is $40 for grade animals and $70 for registered purebreds. The same federal indemnity applies as is paid in New York and other states. The maximum indemnity from State and Federal sources is $65 for unregistered animals and $120 for registered plus the amount of salvage.

However the owner cannot get over 90% of the appraised value from the three sources.

New Jersey pays an indemnity not to exceed $50 for grade animals and $100 for registered purebreds. The sum paid the owner is equal to 1/3 of the difference between the appraised valuation and the salvage providing the amount does not exceed the amount specified.

NUMBER OF TESTS REQUIRED TO FREE 4,995 HERDS FROM BOVINE TUBERCULOSIS

Herds	Cattle	Infection % 1st	% 2d	% 3d	% 4th	% 5th	% 6th	% 7th	% 8th
2101	39449	20	0	0	0	0	....	....	*
2096	52061	27	10	0	0	0	....	....	*
487	13367	29	11.3	8.9	0	0	....	....	*
184	6438	23.3	18.5	11.2	3.5	0	....	....	*
88	3650	26.0	9.4	8.4	5.2	4.9	0	....	*
28	1398	32.0	7.7	5.9	3.4	2.7	1.3	0	*
10	435	33.0	14	7.8	5.6	4.2	3.4	1.1	0
4995	67018	....	....	....	....	....	....	....	*

From records of N. Y. State Department of Farms and Markets.

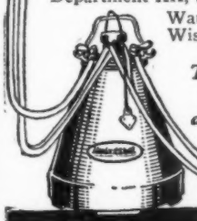
It Pays to Produce Clean Milk!

PRODUCING *clean milk* is a matter of *good business* as well as *good health*. Any milk—whether it's Certified, Inspected, Grade "A", or just plain milk, must be low in bacteria count, to find a ready market.

For this reason farmers and dairymen producing Certified, Inspected and Grade "A" Milk, do their milking with *Universal Milking Machines.*

Not only does the Universal Milker produce *cleaner milk* than can possibly be obtained by even the most careful hand milking, but it also cuts milking time and labor in half—and then some! Write for free catalog that tells all about this better way of milking.

THE UNIVERSAL MILKING MACHINE CO.
Department AA, Syracuse, N. Y.
Waukesha, Wisconsin.



Two types: Double and Single Units

Universal natural milker

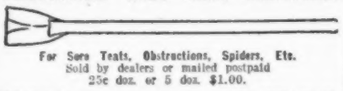
FENCING We manufacture a ready-made Cedar Picket and Galvanized Wire Fence—interwoven — Painted Green—Red—or Plain—made in 3 or 4-ft. heights. For chickens, farms, yards and lawns.

100 FT. TO ROLL
Used extensively for snow protection along Highways. Write for prices and catalog.
NEW JERSEY FENCE CO., BURLINGTON, N. J.

ECONOMY SILOS

Made absolutely permanent by our patented Storm-proof Anchor System. Built of the very best materials. Will last a lifetime. Write for catalog and prices.
ECONOMY SILO & MFG. CO.
Dept. 507-B Frederick, Md.

"PURPUL"
MEDICATED WAX TEAT DILATORS



For Sore Teats, Obstructions, Spiders, Etc.
Sold by dealers or mailed postpaid
25c doz. or 5 doz. $1.00.
MOORE BROS. Dept. A ALBANY, N. Y.

Cleaning Solution For Milking Machines

(*Continued from page 5*)

The stock solution of chloride of lime is made by mixing, in a jar, one 12-ounce can of chloride of lime with a gallon of water. This is best done by adding enough water to the dry powder to make a paste, and then adding the remainder of the gallon of water. This solution must be kept covered. After the sediment has been allowed to settle for a few hours, one pint of the clear top liquid should be added to the brine solution. Care must be taken that only fresh chloride of lime is purchased. Old or badly caked material is worthless.

Several commercial hypochlorite solutions are on the market if it is not desired to make it at home.

The brine-and-chloride solution for the milk tubes can be used as long as it remains clean and sweet.

None of these disinfectants will penetrate into the greasy material that may accumulate and from which millions of bacteria will be added to the milk. Disinfection will not take the place of cleanliness.

Mineral Mixtures

For Cows

The simplest way to feed a mineral supplement is to keep a box of minerals in the yard or pasture so that the animals have access to it daily. Where this is done, salt should be included in the mixture to increase its palatability.

The following mixtures are suggested:

200 lbs. bone meal	100 lbs. finely ground
100 lbs. salt	limestone
100 lbs. bone meal	100 lbs. salt

Allow free access to the above mixture at all times.

For Hogs

The following mixture is suggested as one that will meet the pigs needs for calcium, phosphorus, and salt, and which will be readily eaten in the self-feeder:

30 pounds bone meal
30 pounds ground limestone or other carbonate
20 pounds salt
20 pounds tankage

For Horses

Special steamed bone meal or equal parts of this bone meal and finely ground limestone will be readily eaten by horses when included as 2 per cent of the grain mixture.

For Inflamed Udder

Belladonna root, 1 drachm;
Oil of turpentine, 1 ounce;
Camphor, 1 drachm;
Solution of green soap, 6 ounces.
Mix and make a liniment. Bathe the udder several times with hot water. Dry and apply above liniment.

Champion Producers of the Dairy Breeds

HOLSTEIN

Milk: *Segis Pietertje Prospect,* 37,381 lbs. milk, 1,158.95 lbs. fat.
Fat: *De Kol Plus Segis Dixie,* 33,464.7 lbs. milk, 1,349.31 lbs. fat.

GUERNSEY

Milk: *Murne Cowan,* 24,008 lbs. milk, 1,098.2 lbs. fat.
Fat: *Anesthesia Faith of Hill Stead,* 19,741 lbs. milk, 1,112.5 lbs. fat.

JERSEY

Milk: *Madeline of Hillside,* 20,624 lbs. milk.
Fat: *Darling's Jolly Lassie,* 16,425 lbs. milk, 1,141.28 lbs. fat.

BROWN SWISS

Milk: *Believe,* 25,847 lbs. milk, 1,002.62 lbs. fat.
Fat: *June's College Girl,* 24,571 lbs. milk, 1,062.3 lbs. fat.

AYRSHIRE

Milk: *Garclough May Mischief,* 25,329 lbs. milk, 894.91 lbs. fat.
Fat: *Lily of Willowmore,* 22596 lbs. milk, 955.56 lbs. fat.

CHANGES IN THE NUMBER OF DAIRY CATTLE IN THE NEW YORK MARKET-MILK AREA, 1920-1925

	Number of dairy cows				Number of other dairy cattle			
	1920	1925	dec.	% dec.	1920	1925	dec.	% dec.
New York—42 counties	1,251,195	1,157,756	93,439	7.5	506,588	363,914	142,672	28.2
New Jersey—3 counties	50,086	46,238	3,848	7.7	16,065	9,907	6,158	38.3
Pennsylvania—4 counties	107,263	103,714	3,549	3.3	50,008	35,280	14,728	29.5
Vermont—4 counties	91,812	87,434	4,378	4.8	38,763	29,620	9,143	23.6
Total—53 counties	1,500,356	1,395,142	105,214	7.0	611,422	438,721	172,701	28.2

—"Farm Economics".

A Better De Laval Separator For Fewer lbs. of Butter~

(Based on average price of 92 score butter for each year. Present indications are that butter prices for 1927 will be as high or higher than for 1926.)

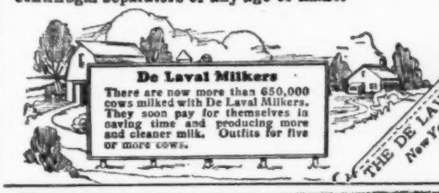
In 1914 it required 250 lbs. of butter to buy a popular size De Laval Separator; five years ago 221 lbs. were required to buy the same size De Laval; while today approximately only 214 lbs. are required to buy it.

But the De Laval Separator of today is greatly improved over the 1914 and 1922 machines. It has many improvements and refinements, including the famous "floating bowl." It skims cleaner and runs easier, and is more convenient to operate and handle. It is the best De Laval Separator ever made, and that is saying a great deal.

See—Try—and Trade

See and try the De Laval. Run the skim-milk from your old separator through it. If you are losing any butter-fat the new De Laval will surely recover it. Thousands of people have tried this simple test and many have been surprised at the saving made by the new De Laval. Trade allowance made on old centrifugal separators of any age or make.

See your De Laval Agent or send coupon for full information.


De Laval Milkers
There are now more than 650,000 cows milked with De Laval Milkers. They soon pay for themselves in saving time and producing more and cleaner milk. Outfits for five or more cows.

THE DE LAVAL SEPARATOR COMPANY, Dept. 1-19
New York, 165 Broadway Chicago, 600 Jackson Boulevard
San Francisco, 61 Beale Street
Send catalog checked — Separator ☐ Milker ☐
Name_____
Town_____ R. D.____
State_____ No. Cows_____

Paying More to Make More

RECENTLY we wrote a message to feeders explaining how we made every possible saving in the cost of the feeds we manufacture, and passed the saving on to the feeder.

One of our Organization, commenting on the article stated, "That's all right, but they will want to know why Tioga Dairy Feeds are not cheaper than other feeds".

He is right; you should know.

If you are buying an automobile instead of feed and could get a Studebaker for the price of a Ford, you would be getting exceptional value; you could even pay considerably more and still be getting a real bargain.

The same principle holds true in buying feed. It is not so much a question of the price you pay as it is what you get.

In Tioga Dairy Feeds you get more value. At times the price is higher, often it is lower than other feeds of similar crude analysis, but you are always getting the same standard of feed that will make you the most profit; the best that money can buy.

We never lower the nutritive standard to lower the price. The cost of the best ingredients we can buy plus our manufacturing profit always makes the price of Tioga Dairy Feeds. Our customers get whatever saving we can make in the cost.

To help feeders prosper in this way is our aim in the manufacture of Tioga Dairy Feeds for we realize that our business prospers only as we make our service of value to you. That's why we never lower the feeding value to cheapen the price.

Tioga Dairy Feeds may cost more than other feeds even if the crude analysis is the same but the extra cost makes you several times the amount in extra profit. If you are not using them, we wish you would ask someone who is and learn from him the results that can be obtained.

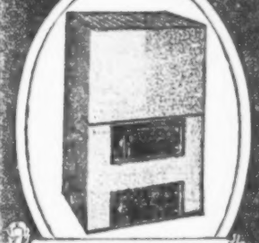
A. C. PALMER, Pres.

TIOGA-EMPIRE FEED MILLS, Inc.
Waverly, N. Y.

Use the TI-O-GA Dairy Feed which forms a balanced ration with your own roughage

TI-O-GA FEED SERVICE

How I Saved Half My Coal!



BULLDOG PIPELESS FURNACE

"I had a hot air furnace in our house before I got the Bulldog and our 7-room house was always cold. With the Bulldog it only takes **half** as much coal and in zero weather the house was warm when we got up." Jess T. Conrad, 1211 W. Arch St., Shamokin, Pa. Hundreds of letters equally astounding. **Write for them!**

No Money Down

Small Monthly Payments

The Bulldog comes completely erected—is installed almost as easily as a cook stove—and is sent for free inspection. Then, if satisfied, you make small monthly payments at our amazingly low price.

Factory connections in both East and West. Shipped from nearest point.

FREE! Our big illustrated book shows how to get all the heat you want—**where and when** you want it—**and save money!** Send for this free book TODAY!

BABSON BROS., Dept. 30-63
19th St. & California Av., Chicago

The Farmer's Market

MILK PRICES

THE following are the March prices for milk in the basic zone of 201-210 miles from New York City.

Dairymen's League prices are based on milk testing 3.5%. Sheffield and Non-Pool prices are on the basis of 3%.

Class		Dairymen's League	Sheffield Producers
1	Fluid Milk	$3.00	$2.85
2	Fluid Cream	..	2.20
2 A	Fluid Cream	2.31	
2 B	Cond milk Soft Cheese	2.56	
3	Evap., Cond., Milk Powder, Hard Cheese	2.40	2.15
4	Butter and American cheese	... Based on New York City Market quotations on butter and American cheese.	

The above prices in each class are not the final prices the farmer receives. The final price received from the dealer is the result of the weighted average.

The Class 1 price for January, 1926, was $2.80 for 3% milk.

Interstate Producers

The Interstate Milk Producers Association (Philadelphia Price Plan), announce the receiving station prices or the price to the farmer in the 201 to 210-mile zone from Philadelphia for 3% milk is $2.54. In the 101 to 110 mile-zone, the price is $2.64. The November surplus price for 3% milk is reported as $1.97 per cwt.

BUTTER MARKET HIGHER

CREAMERY SALTED	Feb. 23	Feb. 15	Feb. 24 1926
Higher than extra	53½-54	52 -52½	45½-46
Extra (92 sc)	53	51½-	45 -
84-91 score	48½-52½	47½-51	41 -44½
Lower G'd's	46 -48	45 -46	40 -40½

CHEESE HOLDS FIRM

STATE FLATS	Feb 23	Feb. 15	Feb. 24 1926
Fresh fancy	——	——	——
Fresh av'ge	——	——	——
Held fancy	27½-28	27½-28	27½-29
Held av'ge	26 -27	26 -27	26 -27

EGGS CONTINUE WEAK

NEARBY WHITE	Feb. 23	Feb. 15	Feb. 24 1926
Selected Extras	33-34	38-39	42-43
Extra Firsts	31-32	36-36½	40-41
Av'ge Extras	29-30½	35-35½	39-39½
Firsts	——	34-34½	38-38½
Gathered	27-30½	33-35½	35-39½
Pullets	27-30½	——	35-36
BROWNS Fancy	30-31	39-40	33-35

LIVE POULTRY STILL FIRM

FOWLS	Feb. 23	Feb. 15	Feb. 24 1926
Colored	30-31	-30	31-32
Leghorns	30-32	30-32	31-32
CHICKENS Colored	30-31	——	33-40
Leghorn	30-32	——	——
Broilers	45-50	40-48	50-60

Tariff on Agricultural Products

Cattle, from 1½ to 2 cents a pound.
Sheep and goats, $2 a head.
Fresh lamb, 4 cents a pound.
Hogs, ½ cent a pound.
Bacon and hams, 2 cents a pound.
Lard, 1 cent a pound.
Milk, fresh, 2½ cents a gallon.
Milk, condensed or evaporated, unsweetened 1 cent a pound, sweetened, 1½ cents a pound.
Butter and oleomargarine and other butter substitutes, 8c a pound; increased to 12 cents per pound.
Cheese and substitutes, 5 cents a pound, but not less than 25% ad valorem.
Poultry, live 3 cents a pound.
Eggs of poultry, in the shell, 8 cents a dozen.
Honey, 3 cents a pound.
Horses and mules, valued at not more than $150 each, $30 each; valued at over $150 each 25%.
Barley, 20 cents a bushel.
Corn, 15 cents a bushel.
Oats, 15 cents a bushel.
Rye, 15 cents a bushel.
Wheat, 30 cents a bushel.
Wheat flour, 78 cents per 100 pounds.
Apples 25 cents a bushel.
Peaches and Pears, ½ cent a pound.
Peas, green or dried, 1 cent a pound.
Onions, 1 cent a pound.
Irish Potatoes, 50 cents per 100 pounds.
Tomatoes, ½ cent a pound.
Turnips, 12 cents per 100 pounds.
Hay, $4 a ton.
Hops, 24 cents a pound.
Maple sugar and maple syrup, 4 cents a pound.

When to Market for the Holiday Trade

Legal and Jewish Holidays for the balance of 1927, the kind of commodities most in demand, and the best market days.

HOLIDAY	DATE	MARKET DAYS	
Purim	Mar. 18	Mar. 15-17	
Commodities in Demand			Live Fowls, Hen Turkeys, Squabs and Pigeons.
Passover	Apr. 17-18	April. 11-15	
Commodities in Demand			Live Turkeys, Fat Fowls, Ducks and Geese.
Easter	Apr. 17	April. 11-15	
Commodities in Demand			Live Fowls, Capons, Squabs, Pigeons, Spring Calves, also Goat Kids Ducks, Geese, Rabbits, Lambs, Prime Veal for Italian trade.
Last Passover	Apr. 23-24	Apr. 19-21	
Commodities in Demand			Prime Quality of Live Squabs and Pigeons. Poultry of all kinds, also
Feast of Weeks	June 6-7	June 1-3	
Commodities in Demand			Very little extra for this holiday.
Decoration Day	May 30	May 26-27	
Commodities in Demand			Live Broilers and Prime cluding Squabs and Pig- Stock of all kinds, in- eons.
Independence Day	July 4	July 1-2	
Commodities in Demand			Live Broilers, especially, Squabs and Pigeons.
Jewish New Year	Sept. 27-28	Sept. 22-24	
Commodities in Demand			Live Fat Fowls, Turkeys, Ducks, Geese, Squabs
Day of Atonement	Oct. 6	Oct. 3-4	
Commodities in Demand			All prime Live Stock, es- pecially White Leghorn Chickens, Roosters, Squabs and Pigeons.
Feast of Tabernacles	Oct. 11-12	Oct. 7-8	
Commodities in Demand			Live Ducks, Fowls, Fat Geese, Squabs
Feast of Law	Oct. 19	Oct. 14-15	
Commodities in Demand			Prime Quality Poultry of all Kind.
Columbus Day	Oct. 12	Oct. 7-8	
Commodities in Demand			Live Chickens, Fowls, Rabbits, Squabs
Thanksgiving Day	Nov. 24	Nov. 21-23	
Commodities in Demand			Live Turkeys, Geese, Hens, Rabbits, Squabs Fowls, Capons, Guinea and young pigs.
Christmas Day	Dec. 25	Dec. 20-24	
Commodities in Demand			Live Turkeys, Geese, Hens, Rabbits, Goat Kids, Squabs and Pig- eons, Suckling Pigs. Fowls, Capons, Guinea

Better Prices for Your Butter

"Dandelion Butter Color" gives that Golden June Shade which Brings Top Prices

Before churning add one-half teaspoonful to each gallon of cream and out of your churn comes butter of Golden June shade. "Dandelion Butter Color" is purely vegetable, harmless, and meets all State and National food laws. Used for years by all large creameries. Doesn't color buttermilk. Absolutely tasteless. Large bottles cost only 35 cents at drug or grocery stores. **Write for FREE SAMPLE BOTTLE.** Wells & Richardson Co., Inc., Burlington, Vermont.

Once Used Second-Hand

EGG CASES

30-Dozen size with Flats, Fillers and Lids. Carriers for both Peaches and Tomatoes. Berry crates, Hampers, Baskets and all other Fruit and Vegetable Containers. New and Second-hand Flats, Fillers and Excelsior Pads. Let us quote you.

EMPTY PACKAGE SUPPLY CO.
Dept. A.
89 Waterbury St., Brooklyn, N. Y.

STROUT'S SPRING FARM CATALOG JUST OUT!

126 big illustrated pages crammed with unusual bargains from many states. Money-making equipped dairy, poultry, fruit farms; grain, general & truck farms; roadside businesses, village places, summer homes on mountain, lake & river. On pg. 22 only $400 cash needed for 22 acre state road farm, mile village; sparkling brook, good orchard, neat 6-room home; full price $1000 includes horse, cows, poultry, equipment, furniture, crops. One Strout buyer writes "$2000 more than I paid would not buy my farm today, after living on it six months." There's a bargain for you, too. In this handsome, big catalog. Write today, **at once**, for your free copy. **STROUT AGENCY, 255-B, 4th Ave., New York City.**

HIGHEST PRICES FOR OLD BAGS

We take good and torn mixed and pay freight.
Write for prices
IROQUOIS BAG CO., Inc.
670 Clinton St. Buffalo, N. Y.

EGGS WANTED

Well-packed, evenly graded, Whites and Browns bring highest prices
LEWIS & SANDBANK
Licensed and Bonded
152 Reade St., New York
REFS. GREENWICH BANK: COM. AGENCIES

Ship Your Heavy Fowl Now

—ALSO CHICKENS AND BROILERS—

It is our business to make the most money for you. That is why we charge 5% commission. One-trip coops are shipped direct from factory at special cost-price to us. **We allow 25c for each 1-trip we receive.**

Write or wrote for information, tags, coops, etc.

BERMAN & BAEDECKER, Inc.
West Washington Market, - New York City, N. Y.

SHIP YOUR EGGS

WHITE AND BROWN
To R. BRENNER & SONS
Bonded Commission Merchants
358 Greenwich St., New York City

Fancy Eggs Wanted

Best Prices Prompt Returns
Herschel Jones Marketing Service,
EGG DEPARTMENT
127 Reade St., New York
Licensed and Bonded by
N. Y. State Dept. Farms & Markets

FARMING PAYS in the SOUTH

Pays well, because of the distinctive advantages the South affords farmers: such as *Climate*, permitting outdoor work every month in the year; low-cost *Living* for farmers and their hired help, which makes farming all the more profitable; *Land* on which varieties of crops can be abundantly grown; cheap and reliable farm *Help*. Add to these advantages those of good *Neighbors*, good *Schools* and good *Roads*—and happy is the farmer who lives in the South.

Write and say what kind of farming you want to do, and full information as to where and how you can do it in the South, will be sent *free*. Address G. A. Park, Gen. Imm. & Ind. Agt., L. & N. R. R., Dept. AA-11 Louisville, Ky.

L&N

Eggs, Etc. — Small consignments from producers in your territory bring very attractive prices NOW. Prompt returns always. Refer to Dun or Bradstreet. Ship us your next case. ZENITH BUTTER & EGG CO., 370 Doane St., New York, N. Y.

BROILERS

will bring big prices from now on. We feed and water your poultry thoroughly before selling. Returns made daily.
COOPS SUPPLIED FREE
MICHAEL GARLICK & SON
W. Washington Mkt. New York City
No Connection with Any Other Concern

POULTRY SHIPPERS ATTENTION!

Ship Your Live Stock to NEW YORK CITY, IF YOU want the Highest Prices obtainable, for Your Stock. But only do business with a well known and highly recommended firm. Inquire about their Financial Standing.

KRAKAUR POULTRY COMPANY, Inc.
BONDED COMMISSION MERCHANTS
WEST WASHINGTON MARKET, NEW YORK CITY
44 Years in Business In This City.
SOME OF OUR SHIPPERS—Cornell College, Penn State College, Prof. Harry Lewis, Prof. James Rice, Etc.

For Breeders of Livestock

How to Prevent and Treat Stomach Worms in Sheep

Prevent parastic infection by:

1. Rotating pastures frequently. 2. Supplying temporary pastures. 3. Keep salt mixture before them.

Recommended mixture:

a. 1 bbl. salt ..... 280 lbs.
Iron sulfate ..... 12½ lbs.
Charcoal ..... 9½ lbs.
Sulfur ..... 6 lbs.
Turpentine ..... 2 quarts
Mix solids first, then add turpentine and mix again.

b. A tonic.
Salt ..... 100 lbs.
Sulfate or iron ..... 6 lbs.
Sulfur ..... 2 lbs.
Powdered gentian or ginger root 1 lb.

How to Prepare and Administer the Bluestone or Copper Sulfate Dosage in the treatment for stomach Worms

In the preparation of the dose use only clear blue crystals of copper sulfate (bluestone). When ready to make up the solution, crush the crystals to a fine powder. Dissolve ¼ pound (avoirdupois) of the powdered crystals in one pint of boiling water, using a porcelain or enamel-ware dish, as the bluestone will corrode most metals. Then add enough cold water to make 3 gallons, using wooden, earthenware, or other nonmetallic receptacles. This will make an approximate one-per-cent solution and will be enough to dose 100 adult sheep allowing for about a ten-per-cent waste.

The amounts of the dosage for both old sheep and lambs are:

For lambs under one year of age .....1¾ ounces (50cc)
For sheep past one year old .....3½ ounces (100cc)

A glass with marks scratched on the side with a file may be used for measuring the doses.

Sheep may be drenched with a narrow-necked bottle, a syringe, or funnel and rubber tube with a brass mouthpiece in the end.

Customarily the treatment is given after the sheep have been starved over night; but apparently it may be given with equally good results without preliminary fasting, provided the animals are not gorged with feed or water when treated.

While being drenched, the sheep should remain on all four legs with its head held horizontal (nose higher than eyes), there is danger of some of the fluid passing into the lungs, thereby causing pneumonia and almost certain death.

Care in the administration of the dose is highly important as carelessness or any undue haste is liable to have serious results. See *Farmers' Bulletin* 1150.

How to Castrate Lambs

CASTRATION is not dangerous, if a little care is taken, and can be performed by any average person—Lambs should be castrated when they are from 7 to 14 days old. Choose a bright day, don't castrate lambs on a damp or rainy day. Select all lambs from the flock that are to be castrated and fence them off so that they can be caught without undue excitement. Never worry or chase lambs about before performing the operation. Provide a clean stall or pen for them to go back to after the operation is performed. See that your hands are clean and the knife has been disinfected.

The Operation

The lamb should be held against the body, the front and hind foot grasped tightly. Cut off one-third of the lower end of the scrotum or bag, so as to permit good drainage. Then expose the testicles and with the left hand force them out, holding them in a firm grip between the the thumb and fingers, the fingers held close to the abdomen of the lamb. With the right hand grasp the testicles firmly between the thumb and finger and draw the testicle out with the adhering cords. The work should be done quickly but not roughly and a steady pull should be exercised in drawing out the testicles and adhering cords. The wound should then be washed out with a good antiseptic as carbolic acid or creolin solution.

Care After Operation

Lambs should be permitted to be quiet after the operation. It is best to perform the operation in the morning so the lambs can be watched during the day and attention given if any become too weak from loss of blood.

When lambs are older than three weeks before the operation is performed the cord should not be pulled out, but scraped off with a knife back of the testicles. This is done to prevent excessive bleeding.

How to Dock Lambs

Lambs may well be docked at one to two weeks of age. Some sheepmen dock them when even younger than this. Whatever method of docking is practiced; that is, by knife, chisel, shears, or hot pinchers (heated to cherry color) care must be exercised to avoid cutting too close to the body. A dock from one to two inches long is about right. The skin is pushed slightly toward the body and the upper side of the dock left longer than the lower side. Severe bleeding seldom occurs when the knife is used and never occurs when pinchers at the proper heat are used. Some have used ordinary small pruning shears with good results; these shears are convenient to use, not of high cost, and if not very sharp, their method of cutting seems to discourage bleeding.

Should serious bleeding occur, a string may be tied slightly around the dock close to the body and left for an hour or two. If left too long the stump may slough off. Disinfection, as in castration, may well be practiced, excepting that it is not necessary when hot instruments are used. Applying pine tar may prevent worry from flies in hot weather.

Rations for Swine

For growing pigs. Feed growing pigs 4 lbs. of grain for each 100 lbs. of live weight.

Ration No. 1. Hominy or corn meal, 10 lbs. Ground oats (fine), 10 lbs. Skim-milk, 1 qt. to 1 lb. grain.

Ration No. 2. Hominy or corn meal, 10 lbs. Ground oats (fine), 10 lbs. Fish meal or tankage, 2 lbs.

Ration No. 3. Ground barley, 10 lbs. Wheat mids, 5 lbs. Skim milk, 1 qt. to 1 lb. of grain.

For Fattening Pigs.

Ration No. 1—Hominy, corn meal or shelled corn, 10 lbs. Fish meal or tankage, 1 lb.

Ration No. 2. Hominy, corn meal or shelled corn, 10 lbs. Skim milk, 1 pt. to 1 lb. of grain.

For Brood Sows

Feed brood sows 1 to 3 lbs. of grain per 100 lbs. liveweight, depending upon their condition.

When Dry—Hominy, corn meal or shelled corn, 10 lbs. Ground oats, 10 lbs. Bran, 5 lbs.

Just before and just after farrowing. Ground oats, 10 lbs. Barn, 10 lbs. Skim milk, 1 qt. to 1 lb. grain or tankage 2 lbs.

After pigs are 3 weeks old. Hominy corn meal or shelled corn 10 lbs. Ground oats 10 lbs. Bran, 10 lbs. Tankage, 3 lbs. or 1 qt. skim milk to 1 lb. grain .

For nursing pigs, (to be placed in creeps)—Ground oats (sifted) 1 lbs. Wheat mids. 1 lb.

How to Eradicate Worms in Hogs

Secure in a capsule:

Santonin ..... 3 grains
Calomel ..... 3 grains

Open the pig's mouth and place the capsule well back on the tongue. A dash of water insures the swallowing of the capsule. This dose is sufficient for pigs weighing 40 pounds or more. Pigs under that size should receive not less than 2 grains of each ingredient. Give the above after pigs have missed one meal, and follow with a mild cathartic in the first feed.

Facts About Hog Cholera

It is the worst disease attacking swine.

It can be prevented.

It is caused by a specific virus.

Anti hog cholera serum is a highly effective preventative of the disease, but it is not a cure for it.

Single treatment (serum alone) will protect unexposed hogs for approximately a month, but confer a permanent immunity upon hogs exposed to cholera near the time of treatment.

Double treatment (serum and virus) confers a permanent immunity. This is a dangerous treatment when administered by inexperienced and careless hands.

Small herds need not be immunized except when the hog cholera appears in the vicinity.

All herds fed on garbage should be immunized.

A veterinarian should be called when cholera is suspected, as it may spread rapidly through the community.

Normal Pulse Beat, Respiration and Temperature of the Horse

Stallion	28-32	per minute
Gelding	33-38	"
Mare	34-40	"
Foal 2-3 yrs. old	40-50	"
Foal 6-12 months	45-60	"
Foal 2-4 weeks	70-90	"

The pulse may be counted on the edge of the jawbone, directly in front of the heavy muscles of the cheek. A rapid pulse is more than 100 per minute the outpulse usually indicates fever. Where pulse is more than 100 per minute the outlook for recovery is bad.

Normal Temperature of the Horse

The normal temperature of horses varies from 99.5 degrees F. to 101 F. The temperature is taken at the rectum by using a specially made clinical thermometer about 6 inches long. 104 F. is a moderate fever, 106, F. is high. If above 106 it must be reduced promptly if the horse is to be saved.

The normal rate of respiration for a horse at rest is from 6 to 16 per minute. Acceleration of this rate when the horse is at rest may be caused by fever, by filling of the lungs as in pneumonia or by other diseases.

NUMBER OF HORSES AND MULES ON FARMS IN THE UNITED STATES AS REPORTED BY THE CENSUS

Year	Number of Mules	Number of Horses	Ratio
1850*	559,331	4,336,719	7.75
1860*	1,151,148	6,249,174	5.43
1870*	1,125,415	2,145,370	6.35
1880*	1,812,808	10,357,488	5.71
1890	2,251,876	15,266,244	6.78
1900	3,445,029	21,216,888	6.16
1910	4,209,769	19,833,113	4.71
1920	5,432,391	19,767,161	3.64
1925	5,730,608	16,535,759	2.89

*Prior to 1890, asses and burros were included with mules.

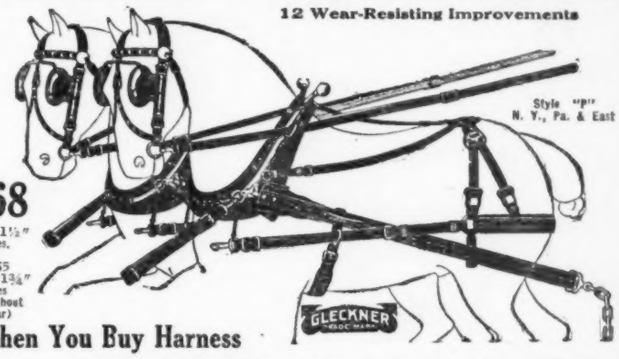
—*"Farm Economics."*

Pen Room Needed for Sheep

Allow from twelve to sixteen square feet of floor space for breeding ewes, not including the space required by feed racks. This will mean a pen three by four, or four by four feet square, per ewe. Young stock or sheep that are being fed for market will need not more than from five to eight square feet of floor space per head. A pen twenty feet square, therefore, should accommodate from fifty to eighty head.

GLECKNER 1000 Thousan 1000 HARNESS

12 Wear-Resisting Improvements



$68 for 1½" traces. Add $2.65 for 1¾" traces (without collar)

When You Buy Harness

The three most important things to consider are: Quality, Price and Service. "GLECKNER QUALITY"—is well known and our reputation for making the best harness has been earned by forty-eight (48) years experience in the Harness business. Only best selection of hides, thoroughly tanned; genuine linen thread and tested hardware are used in GLECKNER Harness. Every operation is under the direction of a member of the GLECKNER family (father and four sons).

"GLECKNER" PRICE—is lower than any other high quality harness. Standardization and quantity production have reduced the cost. Hence the name 1000 "Thousan" 1000 Harness illustrated above. (Thousand of one kind).

SIGN of the Gleckner Dealer

"GLECKNER" SERVICE—is given by the GLECKNER dealer nearest to you. He will let you examine the Harness, explain the easy adjustments, fit it to your horses if you so wish, see that you receive the red Guarantee Tag that goes with each set and arrange time payments if desired. He always keeps in stock extra parts for your convenience. No letters to write, no red tape, No special hardware to cause delay.

Berlin, N. H., Feb'ry 14, 1924.
"We have handled your team Harness for several years. We have sold most of them to Lumbering Companies and they have given the best of satisfaction."
J. F. BELL & SONS COMPANY.

FREE—Send for Booklet with information about the 11 other styles and 12 Wear-Resisting Improvements. Ask for name of nearest GLECKNER Dealer.

W. W. GLECKNER & SONS CO., Canton, Pa.
Also manufacturers of Men's Quality Leather Belts.

Bruised Knee, Bog Spavin, Thoroughpin, Wind Puff

and Similar Blemishes are Quickly Reduced with

ABSORBINE
TRADE MARK REG. U.S. PAT. OFF.

It is powerfully penetrating, soothing, cooling and healing—strengthens and invigorates tired, lame muscles and tendons; stops lameness and allays pain; takes out soreness and inflammation; reduces swellings and soft bunches. It is mild in its action and pleasant to use.

ABSORBINE does not blister or remove the hair, and horse can be used.

Use ABSORBINE to reduce Bursal Enlargements, Bog Spavins, Thoroughpins, Puffs, Shoe Boils, Capped Hocks, Swollen Glands, Infiltrated Parts, Thickened Tissues, Rheumatic Deposits, Enlarged Veins, Painful Swellings and Affections: to reduce any strain or lameness; to repair strained ruptured tendons, ligaments or muscles to strengthen any part that needs it.

SEND FOR FREE HORSE BOOK "E"

Your druggist can supply you with ABSORBINE, or we will send you a bottle postpaid for $2.50. Write us if you have a case requiring special directions or about which you would like information.

W. F. Young. Inc., 579 Lyman St., Springfield, Mass.

I never dread the freshening period now—

WHAT a relief! No more troubles at calving! No sick cows from Retained Afterbirth. No losses from Barrenness due to injuries to the genital organs when lowered in vigor. No lay-off with sickness when the milk crop should be at the peak.

If you have been accustomed to leaving the health and vigor of freshening cows to chance, you know something of the troubles you can avoid by simply giving Kow-Kare two to three weeks before and after calving. The best dairymen in the country make it a regular practice—would not think of getting along without it.

Kow-Kare builds up the vigor of the digestion and the genital organs so that the unusual strain of calf-birth becomes a safe, natural process. The cow comes back to generous milk giving; the calf is a money-asset from the start. Used with unfailing results for over 30 years. A concentrated medicine that costs you nothing to use. The certain milk gain pays for it many times over.

Thousands of dairymen use Kow-Kare sparingly during winter feeding for all their cows. It helps them turn more of their heavy feeds into milk—keeps them responsive, healthy, vigorous. Kow-Kare brings back to health cows troubled with Barrenness, Retained Afterbirth, Abortion, Bunches, Scours, Lost Appetite, etc. Try Kow-Kare once and you will not keep cows without it.

DAIRY ASSOCIATION CO., Inc., Lyndonville, Vermont

Makers of Kow-Kare, Bag Balm, Grange Garget Remedy, American Horse Tonic, etc.

KOW-KARE

FAMOUS CONDITIONER OF MILCH COWS

Feed dealers, general stores, druggists have Kow-Kare—$1.25 and 65c sizes (six large cans, $6.25). Full directions on can. Mail orders sent postpaid if your dealer is not supplied. Our valuable free book on cow diseases sent free, on request.

18

TRADED A TEAM AND WAGON FOR JERSEYS

A few years ago the Thornleys of Oregon determined to start with purebred Jerseys. Conditions made it necessary for them to trade some equipment, harness, a wagon and a team, for foundation stock.

Last month one of their young cows completed an official test with a record of 913 lbs. of fat and 18867 lbs. of milk; another produced over 850 lbs. of fat and 14513 lbs. of milk. Confidence in the Jersey was not misplaced.

Write for a free copy of JERSEY FACTS

The American Jersey Cattle Club, Dept. E
324 W. 23d St. NEW YORK

How to Tell a Good Cow

The only way to tell a good cow is by her performance.

The milk scale and record cards are still the only absolutely reliable means of finding out the real value of a cow. But when records are not available, certain physical points furnish a fairly good indication of a cow's milk producing ability.

The main points are:

1. Large feed capacity. (Large barrel)
2. Dairy temperament. (Wedge shaped body)
3. Well-developed udder.
4. Good blood circulation.
5. Strong constitution.

Large Feed Capacity

Milk is made out of feed. A cow can't make a lot of milk unless she has a large feed capacity, so that she can eat and digest a large quantity of milk making material. The ribs should be well sprung and far apart, the back should be wide over the lions, and there should be a great depth from chest to udder.

Dairy Temperament

The so called "wedge shaped" body is probably next in importance. The first wedge to look for is from the side. The other wedges should be seen looking at the cow from the rear and from the above, the one at the rear having its broad side at the top and its point at the botom. The wedge from the top of the cow should have its point toward the neck.

A Good Udder

Milk is made in the udder and a cow with one or two under-developed quarters, with an udder poorly hung in the rear, or with one cutting off short in the front, is not likely to be a very good producer.

Good Blood Circulation

Milk is made by the milk glands, from material taken from the blood. A good blood circulation means a rapid and constant flow of milk making materials from the intestines throughout the body and particularly to the milk glands. The milk veins on a cow's belly are a good indication of the blood circularization. These veins should be long and crooked and run far forward from the udder. They should also be quite prominent. A well veined udder is also a good indication of good blood circulation.

Good Constitution and Health

There are many points to look for in connection with good constitution and health, but the following are particularly important. A deep chest means a good lung capacity. A smooth, glossy coat means that all of her internal organs are functioning well. A soft and pliable skin tell the same. A bright eye and wide muzzle are other good points.

Common Stock Remedies

Aloes—Cathartic, laxative or bitter tonic depending on the amount given. Requires 15-20 hours for operation. Dose—Cattle, 1-2 oz. Horses 2-8 drams. Sheep and hogs, 1-2 drams. Can be given in warm water as a drench.

Boracic acid—An antiseptic used mainly as a dry powder for a dressing for wounds. It is sometimes used internally for diarrhea in calves. Dose 10-30 grains in syrup 3 times a day.

Carbolic acid—Deoderizes and kills bacteria. Poisonous. It is used in from 2-5% solution as an antiseptic for wounds, particularly those that have pus.

Iodoform—A powder used as a dressing for wounds. May be used alone or with twice its bulk of powdered boracic acid.

Common lime—Lime water, which contains all the lime it will dissolve is frequently given for indigestion in calves.

Raw linseed oil—A laxative. Dose, cattle 2-4 pints. Horses 1-3 pints. Sheep and hogs ¼-1 pint.

Corrosive sublimate—Very poisonous. A one to one thousand solution makes a good disinfectant for barns and for surgical instruments.

Epsom salts—A saline cathartic. Dose, Cattle 1-2 pounds. Sheep and hogs, ½-¼ pound. Not usually given to horses. Dilute and give as a drench.

Saltpeter (Nitrate of potash) Given to stimulate kidneys. Dose, Cattle and horses, ½-2 oz. Sheep and swine, ½-2 drams. Dissolve and give as a drench.

Sweet spirit of nitre—A stimulant, is antispasmodic and increases the secretions from skin, lungs and kidneys. Do not mix with water until ready to give. Dose, Horses and cattle, 2-4 oz. Hogs, 2-4 drams.

Turpentine—Stimulant, antiseptic and

Cattle LICE

MONEY BACK PLUS 10%

If Louse Chase doesn't kill every louse.

This marvelous, new powder—discovered by a practical dairyman—kills every louse, quickly, surely—or we pay you for your trouble. No more feed waste with scrubby, sickly, vermin-infested cows. Scores of agricultural college farms and big breeders use this wonderful vermin killer. Whole herd can be treated quickly without muss or fuss—at cost of a few cents per head.

GRAYLAWN FARM LOUSE-CHASE is surely "The Final Answer to the Louse Question." No other louse killer has won such wide approval of dairy authorities.

Handy farm-size sifter top can, $1.00 at your dealers'—or by mail postpaid. Guarantee on every can.

GRAYLAWN FARMS, Inc.
Dept. A-2 Newport, Vt.

LOUSE-CHASE

CATTLE BREEDERS

It is A PLEASURE to tell you about our MILKING SHORTHORNS. Come and see us or write.
M. WHITNEY BERLIN, N. Y.

Guernsey Bull Registered, yearling by Langwater Ali dre. Accredited Herd. From heavy milking dam. *Get pedigree and low price*
LOCUST LAWN FARM, Box A, ELVERSON, PA.

7 Guernsey Cows—BULLS from 8 to 14 months $50. *Registered; not listed*
P. L. DWIGHT DE RUYTER, N. Y.

FOR GUERNSEY heifer calves practically pure, write EDGEWOOD DAIRY FARMS, Whitewater, Wis.

HAY-STRAW-COWS-BULLS-HEIFERS
When in need of alfalfa, timothy, clover hay or straw, write me your needs. Also have a few registered tuberculin tested Holstein service bulls and bred heifers and cows to sell.
Henry K. Jarvis, Richfield Springs, N.Y.

WANTED YOUNG STOCK for pasture. One hundred acres. Flowing well. Cement tank.
ELMER A. SNELL, LaFARGEVILLE, N. Y.

FISHKILL FARMS

Offers

Holstein Heifer

Rich in the blood of Dutchland Colantha Sir Inka

This handsome heifer calf born November 16, 1926, represents four crosses of the blood of Dutchland Colantha Sir Inka, the greatest son of the world's famous milk sire Colantha Johanna Lad. Her sire's dam holds a record of 30.85 pounds of butter in 7 days. Her maternal and paternal sire is Hengerveld Homestead De Kol 4th who has 22 A R daughters, he being by the famous Hengerveld Homestead De Kol out of Jenny Linn Colantha, a 30-pound daughter at four years of age.

For further particulars and pedigrees, prices, terms, etc., write

FISHKILL FARMS
HENRY MORGENTHAU, JR., Owner
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SWINE BREEDERS

Large Type O.I.C. PIGS SIX TO EIGHT WEEKS OF AGE. Bred from prize winning strain. Will ship on approval Price $10.00 with pedigree. E. LAFLER, PENN YAN, N. Y.

FEEDING PIGS

FEEDING PIGS FOR SALE—Either Chester and Yorkshire cross or Berkshire and Chester cross, 7 to 8 weeks old, $6.00 each. 8 to 9 weeks old, $6.50 each. We have an extra nice selection of pigs at present, either pure bred or cross breeds, and are prepared to ship from 2 to 50 C.O.D. on approval. If pigs are unsatisfactory on arrival at your depot, return at my expense.
Safe delivery guaranteed—No charge for shipping crates—Ref. Tanner's Nat'l Bank.
A. M. LUX, 206 WASHINGTON ST., WOBURN, MASS. Tel. Wob. 1415

Pigs For Sale Express charges paid to your depot. Chester and Yorkshire cross or Berkshire and Chester cross pigs, 6 to 7 weeks old, $7 each; 8 weeks old, $7.50 each. Pure bred Chester White Barrows, Boars or Sows, 6 weeks old, $8.50 each. We crate and ship to your Depot. These are net prices. These pigs are all bred from large stock, they are easy feeders and fast growers and will all make large hogs. Will ship and crate from 2 to 50 pigs C. O. D.
CLOVER HILL FARM.
R. F. D. Box 48, Woburn, Mass.

SPRING PIGS FOR SALE.
Chester and Berkshire cross or Chester and Yorkshire cross, all large growthy pigs. Pigs 7 to 8 weeks old, $6.50 each; 8 to 10 weeks old $7.00 each. All good feeding pigs. I will ship from 1 to 100 C. O. D. to you on approval, and you can feed them a week. If not satisfactory, return pigs and I will return your money. Safe delivery guaranteed. No charge for crates. I have plenty of pigs for prompt delivery.
WALTER LUX
388 Salem St., Woburn, Mass. Tel. 0086.

Your Chance to Have a Craine Silo

at about half the cost of a new, ordinary silo.

That tilting, weakened, dilapidated silo of yours—
Have it rebuilt the Craine Way and turn loss into profit!
Every year more dairy owners order us to rebuild for them. They see an *opportunity*—just like *yours*. They get a real *Craine*—the silo that laughs at smashing storms—resists frost—keeps silage better—stands firm and straight—needs no tinkering—earns profits for *years*.
You know what a good silo means to you. Now's your chance to *have* it—and *save hundreds of dollars* at the same time!
Write to us. Tell us about your present silo. Ask for information about Craine rebuilts—how they stand up and serve others—how we rebuild—what you *get*.
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CRAINE
TRIPLE WALL
SILOS
THE CRAINE LINE
THE SILOS OF GIANT STRENGTH

1 year to pay — after 30 DAYS TRIAL

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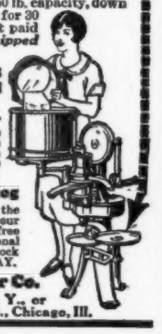
NEW *American* **CREAM SEPARATOR**

Learn all about this brand new, vastly improved Separator. Unexcelled by any in the World for close skimming, easy turning and convenience. New quick-cleaning Bowl is sanitary marvel. Skims warm or cold milk. Makes thick or thin cream perfectly. Seven sizes from large, easy turning 850 lb. capacity, down to one-cow size. Try one for 30 days at our risk. Freight paid both ways if returned. *Shipped from point near you.*



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Tells all about the new models; the many vast improvements; our guarantee of satisfaction; our free servicing and our sensational money-saving trial offer and rock bottom prices. WRITE TODAY.

American Separator Co.
Box 20-K Bainbridge, N. Y., or
Box 20-K 1929 W. 43d St., Chicago, Ill.

CLIP YOUR COWS IT MEANS MORE—

Cleaner and Better Milk

CLIPPED COWS during stable months will keep them clean and comfortable and keep dirt out of the milk pail.
CLIPPING improves the health of CATTLE, HORSES, MULES, etc. Use a GILLETTE PORTABLE ELECTRIC CLIPPING MACHINE. Also furnished with GROOMING ATTACHMENTS for cleaning. Operates on the light circuit furnished by any Electric Light & Power Co. or on any make of Farm Lighting Plant.

Price List Free on Request

GILLETTE CLIPPING MACHINE CO.
129-131 W. 31st St., Dept. A., New York, N. Y.

destroys parasites both external and internal. Useful in indigestion, and bloating. Dose, Horses and cattle, 1-2 oz. Sheep and swine 1/3 oz.

Common Measurements for Medicine

Teaspoon holds about 1 dram (⅛ oz.)
Tablespoon holds about 4 drams (½ oz.)
Desert spoon holds about 2 drams
Teacup holds about 5 oz.

Note.—Home remedies are often useful but care should be used with them. Animals that are sick usually need the care of a veterinarian.

How to Stop a Self-Sucking Cow

One of the simplest and surest methods of breaking a cow of sucking herself is to put an old work bridle on her. The bit of the bridle should be divided in the middle.

This will stop the confirmed sucker. The bit will bother her for a day or two, but she will soon get used to it. This method does not interfere with the cow moving around as she desires.

Dimensions of Stalls and Pens

Kind	Box Stalls or Pens (Feet)	Length (Feet)	Tie Stalls Width (Feet)
Horse			
Single	12x12	7*	5
Double		7	9
Cattle			
Beef	10x12	5	8
Dairy Average		5	(3½ with partition)
Large		5½	(3 without partition)
Small		4	
Sheep (Ewe)	4x 4		
Hogs (Brood Sow)	6x 8		

*Allow 15 feet from front of manger to back of litter alley. All floors in stalls should slope back toward gutter or drain not less than ¼ to 1/3 inch to each foot.

For cattle the gutter should be 16 inches wide, and at least 4 inches deep on alley side and 8 inches on stall side.

Labor Per Cow

Time required per day for the care of one cow:

Operation	1914 (459 cows) minutes	1915 (429 cows) minutes	Per cent of tot'l. time
Milking	16.33	16.14	57
Feeding	3.85	3.39	12
Cleaning cows	.35	.35	1½
Cleaning barn and other care of cattle	4.92	4.95	17
Care of milk and dairy utensils	2.71	.67	2
Incidental labor	.42	.67	2
Business management	.15	.15	½
Total	28.73	28.56	100

—Michigan Agr. Exp. Sta. Bul. 277.

Duration and Frequency of Heat in Farm Animals

	In heat for	If not impregnated heat will recur in
Mares	5-7 days*	3 to 6 week
Cows	2-3 days*	3 to 4 weeks
Ewes	2-3 days	17 to 28 days
Sows	2-4 days	21 days

*Subject to variation.

Average Birth Weight of Calves

The University of Illinois has found the average birth weight of calves of the several breeds to be as follows, depending on the sex:

BREED	WEIGHT
Jersey	60 to 62 lbs.
Guernsey	69 to 70 lbs.
Ayrshire	71 to 78 lbs.
Holstein	88 to 90 lbs.

Definitions and Terms

Line Breeding—Refers to the mating of animals that have been bred along the same blood lines. It may also be defined as the restriction of the mating and selecting of animals to a single line of descent with the purpose of improvement.

Inbreeding—Is the mating of father and daughter, mother and son, or brother and sister.

Purebred—A term denoting registered animals or animals eligible for registration.

Grade—Generally an animal sired by a purebred and out of a grade or scrub cow. It may mean, however, any animal carrying 50 per cent or more of pure blood.

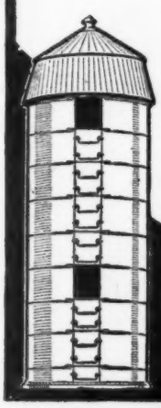
Scrub—An animal carrying little or no pure blood.

Bring Summer Feeding into Your Winter Barn!

Blustery, cold days with the thermometer *way down* and feed prices *way up!* NOW is the time to buy a Unadilla and prepare against such a costly combination. The Unadilla makes and keeps a good, green, succulent, palatable silage that will take the place of grass—and put *profit* into your milk pail.

Its air-tight, frost repellant, storm-defying construction will keep your silage good to the last forkful.

No sticking or freezing of doors. The continuous opening at the level of the silage saves heavy, tiresome pitching. Simply *push* the silage out.



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Our water tubs, storage tanks and vats are sturdily built and attractively priced.

Early cash orders subject to liberal discounts.

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UNADILLA SILOS

"The Cutter That Does Not Clog"

PAPEC

Throws and Blows Saves One Man

"Most Trouble-free Machine a Farmer Owns"

THAT is how one user, C. A. Rogers, Harford, N. Y., describes the Papec Cutter. These features make a strong appeal to others.

"I especially like the ease and security of the adjustment of the knives to the shear plate. The third roll is great, especially on loose or crooked corn, and feeding millet or straw." . . . "It takes all the corn a man can throw off and practically does its own feeding" . . . "Noiseless and slow-running motion" . . . "Requires the least power of any filler I have knowledge of" . . . "The ¼ inch cut makes ensilage look like shelled corn." . . . "Will blow ensilage to the clouds, if necessary" . . . "It works perfectly in every way."

Your Dealer Will Show You a Model Suited to Your Power

Send for FREE 1927 Papec Catalog

It tells how to put up silage at less cost. How to make a Papec pay for itself in one or two seasons. Write for your copy NOW.

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"Your Neighbor Has One – Ask Him"

Dr. Naylor's
MEDICATED TEAT DILATORS

For the treatment of Spider, Obstructions, Hard Milkers, Cut and Bruised Teats, etc.

Made of an absorbent texture capable of carrying the Medicated Ointment into the teat canal to the seat of the trouble. They heal the teat and keep it open.

Three doz. Dilators, sterilized and packed in jar of Medicated Ointment, $1.00. Sold by dealers or mailed post paid. Manufactured by
DR. H. W. NAYLOR, VETERINARIAN, MORRIS, N. Y.

You'll find Kelly quality in both these tires

THE regular Kelly-Springfield tire is built now, as it always has been, for the man who is satisfied with nothing short of the best the market affords.

For those who do not need the extra durability of the regular Kelly product, but who do want to get real value in a lower priced tire, Kelly builds the Buckeye, a sturdy, full-ply, full-size tire that compares favorably with many other tires offered at higher prices.

Whether you want the very best, or whether you simply want good honest tires at a modest price, you can purchase any tire marked "Made by Kelly-Springfield" with the fullest confidence that your money can't buy anything better.

The regular Kelly tire costs no more than any of the well-known makes. The Buckeye costs less. You can't go wrong on either.

"Kelly dealers everywhere—there must be one in your town."

KELLY-SPRINGFIELD TIRE CO.
NEW YORK

KELLY SPRINGFIELD PNEUMATIC TIRES

Apollo

Rust-resisting Copper-Steel

For Culverts, Tanks, Flumes, Gutters, Silos, Roofing, Siding, Etc.

Apollo-Keystone Copper Steel galvanized gives unequaled service, above or below the ground.

APOLLO is the highest quality galvanized product manufactured. When Copper Steel is used it assures maximum rust-resistance. Time and weather prove it lasts longest. Sold by weight by leading dealers. KEYSTONE quality is also unequaled for Roofing Tin Plates. Send for booklets.

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.

KEYSTONE EVAPORATOR
Famous Everywhere

because one man can operate without help of any kind. Our new Keystone Heater increases capacity 40 per cent. uses all waste heat.

Write for catalogue. State number of trees you tap.

SPROUL HDW. CO.
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SAVE HALF Your Paint Bills
USE INGERSOLL PAINT
PROVED BEST by 85 years' use.
ONLY Paint endorsed by Grange for 50 Years.
Made in all colors for all purposes at
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Farm Mechanics

How to Find Size of Pulley

So many subscribers seem to have trouble in finding the proper size of pulleys for feed grinders, saw rigs, and other belt driven equipment that perhaps a few suggestions may be helpful. There is really a very simple rule based on the fact that the size and speed of driving pulley multiplied together equals the size and speed of the driven pulley multiplied together. It may be stated as follows:

To find size of driven pulley—Multiply size and speed of driving pulley together and divide by speed of driven pulley.
To find speed of driven pulley—Multiply size and speed of driving pulley together and divide by size of driven pulley.
To find size of driving pulley—Multiply size and speed of driven pulley together and divide by speed of driving pulley.
To find speed of driving pulley—Multiply size and speed of driven pulley together and divide by size of driving pulley. Pulley sizes should be inches.

Trouble Chart for Gasoline Engines

Loss of Power

IGNITION: Spark occurring too late; spark weak because of partial short circuit or battery becoming exhausted; dirty spark plugs; poor connections; dirty timer; poor or broken wiring in case of magneto; breaker points worn, oily, or out of adjustment; commutator brush dirty or oily.
FUEL: Mixture too lean or too rich: supply pipe partly clogged; inlet valve not opening sufficiently due to wear; water in gasoline; leaks around intake manifold.
MOTOR: Overheating in cylinder or bearings; gummy, inferior or insufficient oil; exhaust pipe partially clogged; governor out of adjustment; lack of compression, which may be due to worn, stuck, or broken piston rings; scored cylinder walls; leaks through and around head joints; valves sticking, worn, pitted, or not seating properly because of dirt; in cold weather engine and cooling water too cold.

Misfiring

IGNITION: Weak batteries; poor connections; dirty timer; vibrator points pitted or dirty; dirty or cracked plugs, points of plug not properly spaced; make and break points not touching properly.
FUEL: Mixture too lean or too rich; gasoline passage partly clogged; water in gasoline.
MOTOR: Lack of compression; valves sticky or not working properly.

Pounding

IGNITION: Spark too early.
MOTOR: Red-hot carbon deposit in cylinder; loose bearings; tight piston, due to lack of oil or lack of cooling water; hot bearings; loose fly wheel; very loose piston (piston slap).

Backfiring

IGNITION: Spark too late. (If motor backfires and stops, spark may be too far advanced); short circuit on primary wire; wires to wrong plugs.
FUEL: Weak mixture; occasionally too rich mixture.
MOTOR: Leaky or stuck intake valve; red-hot carbon deposits; leaky manifold or carburetor gasket.

Explosions in exhaust pipe*

IGNITION: Irregular ignition; poor spark or very late spark.
FUEL: Mixture too lean or too rich.

Overheating

IGNITION: Spark too late, or very weak.
FUEL: Mixture too rich.
MOTOR: Insufficient lubrication; insufficient cooling water; circulation of cooling water impeded; pump not working properly; heavy carbon deposits in cylinder; water chamber coated from impure water.

Irregular Speed

IGNITION: Loose connections, or partly broken wire; vibrator points rough, pitted, or improperly adjusted.
FUEL: Supply to carburetor irregular; dirt or needle valve.
MOTOR: Governor gummy, sticky, out of adjustment or badly worn; valves sticky.

Smoke

Black smoke in exhaust indicates too rich a mixture. Bluish smoke indicates too much lubricating oil. Smoke from the crank case or open end of cylinder indicates leak past the piston; look for worn rings, rings stuck in grooves, or scoring on cylinder walls.

*Often occurs just after starting due to first charges not firing in cylinder and passing through into exhaust pipe, where burning gases from first few explosions will ignite them.

How to Care for Belts

As new belts stretch considerably during the first few days, the end of the lace used should not be cut off short until the stretch is taken out of the belts. In this way the same lacing may be used for resewing.

If the belts have become wet and shrunk, the lacings should be let out before the belts are put on, for very tight belts cause undue friction on the bearings.

When lacing a belt, cut the ends off square with the aid of a try-square.

Lay out the holes for lacing by measure, not by guess.

For canvas belts the holes should not be nearer the end than seven-eighths of an inch or nearer the edge than five-eighths of an inch.

The hinged type of lace is probably the best lace for canvas belts, because the ends of the belt are protected from fraying.

In lacing, keep the lacing as near the same tension throughout the width as possible, so that one edge will not be tighter than the other. If this is not done, the belt will not run true.

Run the flesh side of a leather belt and the seamed side of a rubber belt away from the pulley.

It is better to use two rows of holes for canvas and rubber belts, because the holes are more likely to tear out in these belts than the leather belts.

The use of a punch weakens canvas and rubber belts. Use an awl.

Do not use a pulley narrower than the belt; use one a little wider.

Do not place the tightener pulley against the tight side of belt or near the larger pulley.

Oil allowed to drip on leather belts will destroy their life.

In damp places it is not considered advisable to use canvas belts between fixed shafts or machines.

To find the length of belt required for two pulleys when the length cannot be measured directly by a tape line, add the diameter of the two pulleys together, divide the sum by 2, multiply the quotient by 3¼, and add the product of twice the distance between the centers of the two shafts.

If it can possibly be avoided, do not place connected shafts or pulleys one directly over the other. This does not apply to quarter-twist belts.

Pulleys must be in line to insure the belt running with its full width on them.

Do not attempt to soften a leather belt with lubricating oil. This will rot the belt.

On machines that are constantly stopped and started, use stronger belts than would be needed for steady power only.

Patented sticky belt dressing should be used to prevent slippage only in the working hours, when it is not economical to stop the machine to shorten the belt or to apply proper belt dressing.

How to Figure the Length of a Belt

When lacing a new belt to go over fixed pulleys or fixed shafts, the following rule should be used:

Cut the belt short, so that it will be tight. To do this, stretch a light wire over the pulleys and get the exact length the belt is to be when stretched. For each foot of wire make the belt from 1-16 inch to 3-16 inch shorter, depending on how likely the belt is to stretch. With wire 24 feet long and an average belt, then, allow 1-8 inch per foot, and thus cut the belting 3 inches shorter than the wire.

Alcohol Dilution Table for Radiators

The following table gives the proportions of water and denatured alcohol for cooling systems of various capacities, and the safe temperatures to which the mixtures may be subjected without freezing.

Total Capacity of Cooling System	Down to +20° F		Down to +10° F		Down to 0° F		Down to —10° F		Down to —20° F	
	Pints Water	Pints Alcohol	Pints Water	Pints Alcohol	Pints Water	Pints Alcohol	Pints Water	Pints Alcohol	Pints Water	Pints Alcohol
16 pints (2 gals.)	13	3	11	5	10	6	9	7	8	8
24 pints (3 gals.)	20	4	17	7	15	9	14	10	12	12
32 pints (4 gals.)	27	5	23	9	20	12	18	14	16	16
40 pints (5 gals.)	33	7	29	11	26	14	23	17	20	20
48 pints (6 gals.)	40	8	35	13	31	17	28	20	24	24
Percent of Alcohol and Water	84%	16%	73%	27%	65%	35%	58%	42%	50%	50%
Specific Gravity of Mixture	0.9805		0.9691		0.9592		0.9486		0.9345	

How to Clean a Saw

Saws which are used on farms very often unavoidably get wet, and a wet saw soon becomes rusty. If it is cleaned soon after the rust begins to appear on the blade, it may be brought to as smooth a surface as a new saw. If, however, the saw is neglected, the blade becomes rust pitted, and the pits cannot be removed, because there are depressions in the metal.

Sandpaper, emery cloth or any other substance which would leave marks on blade should not be used in cleaning a saw. Lump pumice stone and water are very satisfactory materials for cleaning saw blades. Four or five 3- or 4-inch lumps weigh a pound and cost twenty-five cents at drug stores.

To clean a saw, place it flat on a bench or some other solid support. Put a small quantity of water on the blade, rub the blade with the pumice stone until all the rust is worn off, and then wipe the blade clean with a rag. All saws, drawshaves, and other smooth tools may be cleaned in this way.

If saws are to be left unused for any length of time, they should be covered with a light coat of machine oil.

Table of Files for Filing Handsaws

(Recommended by a well known saw-manufacturing firm.)

For 3-, 3½-, and 4-point crosscut, use 7-inch regular taper.

For 4½-, 5-, and 5½-point crosscut, use 6-inch regular taper.

For 6-, 7-, 8-, and 9-point crosscut, use 4½-inch regular taper.

For 10-, 11-, and 12-point crosscut, use 5½-inch slim taper.

For 4½-, 5-, 5½-, and 6-point rip, use 4½-inch regular taper.

For 4-point rip and coarser, use 6-inch regular taper.

How to Make a Soldering Flux

Drop small pieces of metallic zinc, a few at a time, into muriatic acid until it stops bubbling. Allow to settle, pour off the clear liquid and dilute with an equal amount of water. Add a piece of sol ammoniac about the size of a walnut to ½ quart of the liquid. This flux is good for cleaning tin and most metals, with the exception of old zinc and galvanized iron.

Use clear muriatic acid as a flux for galvanized iron, but be sure to wash off the acid before soldering.

How to "Tin" a Soldering Iron

First file the point of the iron until each face is smooth and the iron has a good point. Heat to a dull red, dip into the flux already mentioned or rub in sol ammoniac then roll the point in solder. If the cleaning of the iron has been properly done the solder will coat the iron with a thin film. Wipe the iron with a cloth each time it is heated and it will remain "tinned" for some time.

How to Solder a Hole in Tin

First clean the tin around the hole with sandpaper or emery cloth, then cover the metal with flux. Heat the soldering iron which has been properly tinned. Enough solder will stick to the iron to solder the hole. Touch the point of the iron to the hole and if the metal has been properly cleaned the solder will stick and fill the hole.

Number of Nails to the Pound

3	penny	fine,	1¼	Inch	700
3	"	com.,	1¼	"	480
4	"	"	1½	"	300
6	"	"	2	"	160
8	"	"	2½	"	92
10	"	"	3	"	60
16	"	"	3½	"	32
20	"	"	4	"	24
40	"	"	5	"	14
60	"	"	6	"	8
8	"	fence,	2½	"	50
10	"	"	3	"	34

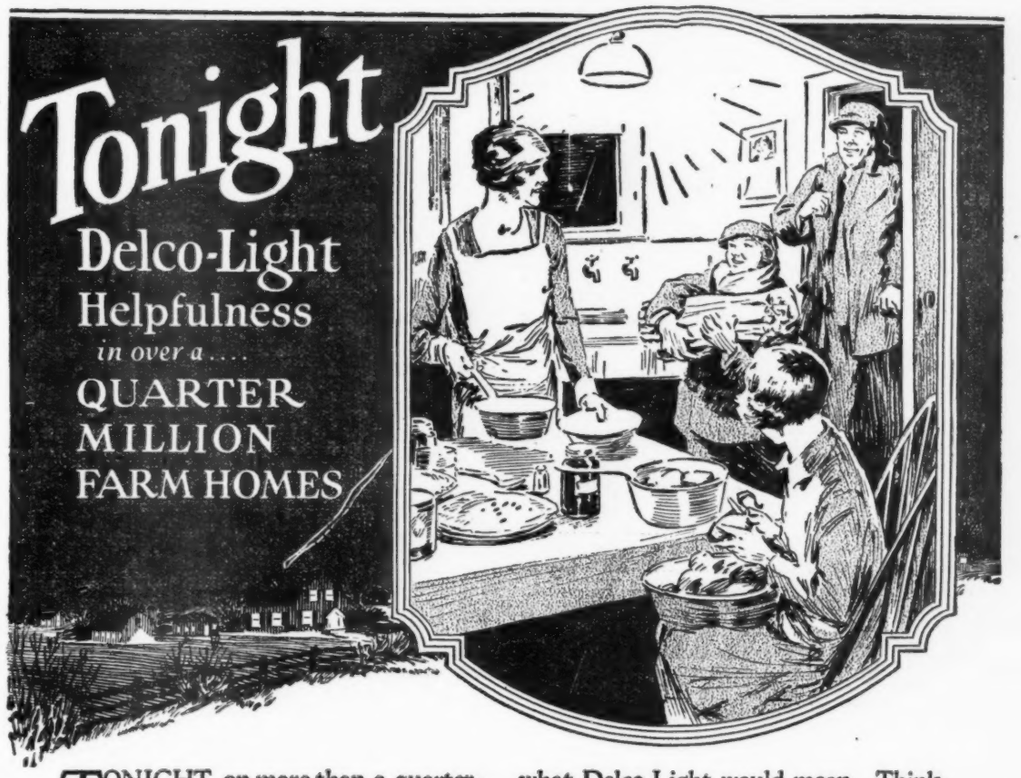
Shingles Required for a Roof

To the square foot it takes 9 if exposed four inches; 8 if exposed 4½ inches, and 7 1-5 if exposed 5 inches to the weather.

Find the number of shingles required to cover a roof 38 ft. long, and the rafters on each side 14 ft. Shingles exposed 4½ inches.

28X38=1064 (sq. ft.) x8=8512 shingles. Ans.

To find the length of rafters, giving the roof *one-third* pitch: take *three-fifths* of the width of the building. If the building is 30 feet wide, they must be 18 feet long, exclusive of projection.



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KFKX, Hastings, Nebraska	288.3	WHAZ, Troy, N. Y.	379.5
KFKF, Shenandoah, Iowa	461.3	WHB, Kansas City, Mo.	365.5
KLDS, Independence, Mo.	440.9	WHBP, Johnstown, Pa.	225
KGW, Portland, Oregon	491.1	WHN, New York	361.2
KHJ, Los Angeles, Calif.	405.2	WHO, Des Moines, Iowa	526
KMOX, St. Louis, Mo.	280.2	WIAD, Philadelphia	295
KMTR, Los Angeles	238	WIBG, Elkins Park, Pa.	223
KNX, Los Angeles	336.9	WIBO, Chicago, Illinois	266
KOA, Denver, Colorado	322.4	WHT, Chicago, Illinois	238
KOMO, Seattle, Washington	305.9	WICC, Bridgeport, Conn.	285
KPO, San Francisco	428.3	WIOD, Miami, Florida	247.8
KTHS, Hot Springs, Ark.	374.8	WIP, Philadelphia	508.2
KTAB, Oakland, California	302.7	WJAR, Providence	305.9
KQV, Pittsburgh, Pa.	275	WJAS, Pittsburgh, Pa.	275.1
KTNT, Muscatine, Iowa	333.1	WJAX, Jacksonville, Fla.	336.9
KYW, Chicago, Illinois	535.4	WJAZ, Chicago, Illinois	329.5
WAAM, Newark, N. J.	263	WJJD, Mooseheart, Illinois	370.2
WAAT, Jersey City, N. J.	235	WJR, Detroit	516.9
WABC, New York	315.6	WJZ, Bound Brook, N. J.	454.3
WABQ, Philadelphia	261	WKBW, Buffalo, N. Y.	362.5
WADC, Akron, Ohio	258	WKRC, Cincinnati, Ohio	342.3
WAHG, Richmond Hill, N. Y.	315.6	WLIB, Chicago, Illinois	302.8
WAIU, Columbus, Ohio	283.9	WLIT, Philadelphia	394.5
WCAM, Camden, N. J.	236	WLS, Chicago, Illinois	344.6
WCAU, Philadelphia	278	WLW, Cincinnati, Ohio	422.3
WCGU, Lakewood, N. J.	350.6	WLWL, New York	384.4
WCX, Detroit, Michigan	516.9	WMAK, Lockport, N. Y.	365
WBAK, Harrisburg, Pa.	275	WMAQ, Chicago, Illinois	447.5
WBAL, Baltimore, Md.	245.8	WMBB, Chicago, Illinois	250
WBAX, Wilkes-Barre	256	WMBF, Miami Beach, Fla.	384.4
WBAP, Ft. Worth, Texas	475.9	WMBS, Harrisburg, Pa.	360
WBBM, Chicago, Illinois	226	WMC, Memphis, Tennessee	499.7
WBBR, Rossville, N. Y.	416.4	WMCA, New York	340.7
WBCM, Chicago, Illinois	266	WMSG, New York	362.8
WBZ, Springfield, Mass.	333.1	WNAC, Boston, Mass.	430.1
WCAD, Canton, N. Y.	263	WNYC, New York	526
WCAE, Pittsburgh	461.3	WOAX, Trenton, N. J.	240
WCBD, Zion, Illinois	344.6	WODA, Paterson, N. J.	390.9
WCCO, Minneapolis, Minn.	416.4	WOIA, San Antonio	394.5
WCSH, Portland, Maine	499.7	WOC, Davenport, Iowa	483.6
WDAF, Kansas City	365.6	WOK, Chicago, Illinois	217.3
WDBG, Winter Park, Fla.	240	WOKT, Rochester, N. Y.	340
WDWM, Newark, N. J.	280.2	WOO, Philadelphia	508.2
WEAF, New York	490.5	WOR, Newark, N. J.	405.2
WEAN, Providence, R. I.	367	WORD, Batavia, Illinois	275
WEAO, Columbus, Ohio	293.9	WOS, Jefferson City, Mo.	440.9
WEAR, Cleveland, Ohio	389.4	WOW, Omaha, Nebraska	526
WEBH, Chicago, Illinois	370.2	WPCH, New York	273
WEBJ, New York	273	WPG, Atlantic City, N. J.	299.8
WEEI, Boston, Mass.	348.6	WPSC, State College, Pa.	261
WEMC, Berien S., Michigan	315.6	WQAO, New York	361.2
WENR, Chicago, Illinois	266	WQJ, Chicago, Illinois	447.5
WFAA, Dallas, Texas	475.9	WRAX, Philadelphia	267.7
WFBG, Altoona, Pa.	278	WRC, Washington, D. C.	468.5
WFI, Philadelphia	394.5	WRNY, New York	374.8
WGBS, New York	315.6	WRVA, Richmond, Virginia	256
WGHP, Detroit, Michigan	270	WSAI, Cincinnati, Ohio	325.9
WGCP, Newark, N. J.	252	WSB, Atlanta, Georgia	428.3
WGBU, Fulford, Florida	278	WSM, Nashville, Tennessee	482.3
WGES, Chicago, Illinois	315.6	WSWS, Chicago, Illinois	275.1
WGL, New York	442.4	WSYR, Syracuse, N. Y.	352.7
WGN, Chicago, Illinois	302.8	WTAG, Worcester, Mass.	545.1
WGR, Buffalo, N. Y.	319	WTAM, Cleveland, Ohio	389.4
WGY, Schenectady, N. Y.	379.5	WTIC, Hartford, Connecticut	475.9
WHAD, Milwaukee, Wis.	275	WWI, Detroit, Michigan	352.7

Farm Mechanics *(continued)*

How to Make Good Concrete

The materials used in making concrete are portland cement, sand, pebbles or crushed rock, and water. The rules for making concrete are easily understood and for uniformly successful work they must be carefully followed.

Proper Proportioning

Concrete mixtures are usually expressed as a 1:2:3 mixture, a 1:2½:4 mixture, etc. The first figure denotes the number of parts of portland cement, the second figure, the number of parts of sand and the third figure, the number of parts of pebbles or broken stone. For example, a "1:2:3 mixture" means that for each sack of cement there should be used 2 cubic feet of sand and 3 cubic feet of pebbles or crushed rock.

Accurate Measuring—Thorough Mixing

It is important that the materials be measured accurately. A platform seven feet wide and twelve feet long is large enough for two men using shovels to work upon it at one time. Such a platform should preferably be made of matched lumber so that joints will be tight. Along three sides of the platform nail strips to prevent materials from being washed or shoveled off while mixing.

At least three turnings are necessary. The mixture of gravel and cement should be uniform in color. A depression or hollow is then formed in the center of the pile and water added slowly while the materials are turned with square pointed shovels, this turning being continued until the cement, sand and pebbles have been thoroughly and uniformly combined and the desired consistency or wetness obtained throughout the mixture.

It is very important that no more water be used than necessary, as too much will reduce the strength of the concrete. Too little water will also reduce its strength and make it porous. For general use, concrete, after thorough mixing, should be wet enough to form a mass of pasty or jelly-like consistency, but never so wet as to flow easily or be soupy.

Placing Concrete in Forms

Concrete should be placed in the forms within 30 minutes after it is mixed. It should be tamped or spaded as it goes into the forms. This operation makes the concrete dense and improves the surface.

Protecting and Curing

Do not permit the newly placed concrete to dry out. Protect it from sun and drying winds for a week or ten days, otherwise the water necessary for the proper hardening will evaporate, resulting in a loss of strength. The concrete can be kept moist by occasional sprinkling.

Suitable Materials

To make good concrete, it is necessary to use proper materials. Both sand and pebbles should be clean and free from dirt or organic matter. Such substances prevent proper bond between the cement and particles of sand and pebbles or crushed rock. The material that will not pass through the ¼-inch screen is referred to as coarse aggregate. The particles of coarse aggregate may range from ¼-inch to 1½ inches or more in size, according to the nature of the work. Crushed rock or screened gravel may be used for this purpose. Bank run gravel (just as it comes from the pit) should not be used without separation. It must be screened to separate sand and pebbles, which are then recombined in proper proportion for the work at hand. Water used in mixing should be clean; if it is fit for drinking, it is suitable for use in concrete.

Some Essentials in Installing Lightning Rods

1. The rods must have sufficient conductivity; that is, they must be of proper material and size, just as a high voltage electric line is larger than the wire used in a house.

2. Proper grounding is necessary. The grounding rods must reach damp earth, which usually is at a depth of 8 to 10 feet. The best advice is not to buy rods if the printed contract does not specify such depth. Four or five feet is not safe in all soils.

3. The correct number of groundings must be installed, as well as the correct number of points. These two items vary with the shape and size of the building, but there should be at least two groundings. On the average building there are about 4 points for each grounding, but on a small building it is well to have three groundings if there are more than 6 points.

4. Since other metal equipment in a building attracts lightning just the same as the rods, such equipment must be connected with the rods. This includes, dairy stalls, haytracks, tractors, farm implements, etc.

How to Ditch with Explosives

Explosives are not practical for digging ditches for tile. This method has marked advantages from the standpoint of ease and economy for open-ditch work in muck, however, particularly through marshy land where stumps, logs, and boulders may be encountered. The explosive is placed in holes ranging from 14 inches to 4½ feet apart, depending on the method of firing used. It may be placed in single, double, or triple rows of holes and at varying depths, all depending on the width and depth of ditch desired. Two methods of firing, the propagation and the electric, are common. The choice of these depends on the nature and condition of the soil and on the particular explosive to be used.

In firing by propagation, the individual charges, which may be from 14 inches to not over 24 inches apart, are detonated by the shock of the explosion of an adjacent charge. Therefore, but one primer or detonator need be used for a series of charges. This method can be used only where the soil is saturated. Usually it works well in plastic clay, but is unsatisfactory in dry clays or in hardpan. Fifty- or sixty-per-cent straight nitroglycerine dynamite must be used, as other grades are too insensitive to be detonated by the shock from the adjacent charges.

In firing by electricity, each charge contains an electric detonator, and all charges are fired at once by an electric blasting machine. Any soils except dry sand and gravel may be blasted when this method is employed. In soil not saturated with water, the charge must be tamped.

Charges to be used. Because of the great variety of soils and the varying conditions under which blasting may be done, it is impossible to state the spacing and loading best for all conditions. The most economical charge and spacing should be determined by making several test shots. The following table will aid in laying out these tests and in roughly estimating the cost of a job. Wider ditches than those indicated in the table can be made by using more rows of charges, and greater depth may be obtained by repeated loadings.

On saturated muck, ½-stick (¼ pound) charges, spaced 18 inches apart, usually give a ditch 2 to 2½ feet deep and 3 to 3½ feet wide. This method is useful for cleaning an old ditch.

The Open Tank Treatment of Fence Posts on the Farm

First.—The creosote is heated to a temperature of 180 degrees to 200 degrees Fahrenheit. The amount of preservative should be sufficient to submerge the lower 3 or 3½ feet of the posts.

Second—the posts are placed in position in the hot creosote.

Third.—A temperature as near as possible to 200 degrees Fahrenheit is maintained for from 2 to 6 hours, depending on the kind of posts being treated.

Fourth.—Enough creosote should be added to the tank once or twice during the hot bath to compensate for the absorption of the preservative in the posts. By keeping the creosote at a uniform level in the tank, the lower 3 or 3½ feet of the posts will receive a uniform treatment.

Fifth.—The fire is allowed to die down. The cooling of the creosote causes an additional penetration of the preservative into the posts. This accomplishes practically the same results as the removal of the posts from the hot bath to a cold tank of creosote. The process, however, requires a somewhat longer time due to the fact that the hot cresote cools slowly.

Sixth.— The posts are allowed to remain in the cooling creosote from 4 to 14 hours, depending on the species being treated.

Seventh. — The creosote should be kept as nearly as possible at a uniform depth during the cooling process also, in order to insure a good penetration of the portion of the post near the ground line, where decay will be most likely to gain entrance.

Eight. — The posts should be removed, the excess surface creosote drained off, and the posts piled in open piles. If the creosote has become cool enough to be only semi-liquid it should be warmed slightly, in order to liquefy, before the posts are removed.

Round posts absorb creosote more uniformly and when treated are more durable than split or sawed posts. Small posts 3 to 4 inches in diameter at top, because they require less labor and less creosote, are more economical than large posts and fully as durable.

Relative Economy of Treated and Untreated Fence Posts

	Untreated sap pine	white or post oak	Creosoted sap pine
Cost of post..	$0.05	$0.12	$0.07
Cost of treatment ..			.18
Cost of setting	.15	.15	.15
Total cost of post	.20	.27	.40
Average life of posts....	2 yrs.	6 yrs.	15 yrs.
Average yearly cost	.10	.04½	.02½
Yearly cost per mile (posts one apart)	32.00	14.40	8.00

From the above table it is apparent that while the original cost of posts in the ground is twice as great for creosoted sap pine posts as for untreated posts of the same material, the average yearly cost of the creosoted posts is only one fourth as great as that of the untreated posts.

How to Make Whitewash

Ordinary Whitewash.— This is made by slacking about 10 pounds of quicklime with two gallons of water.

The lime is placed in a pail and the water poured over it, after which the pail is covered with an old piece of carpet or cloth and allowed to stand for about an hour. With an insufficient amount of water, the lime is "scorched" and not all converted into hydrate; on the other hand, too much water retards the slacking by lowering the heat.

"Scorched" lime is generally lumpy and transparent, hence the use of the proper amount of water for slacking and an after addition of water to bring it to a brush consistency.

Whitewash for Interiors

(1) Sixty-two pounds (1 bushel) quicklime, slake with 15 gallons of water. Keep barrel covered until steam ceases to rise. Stir occasionally to prevent scorching.

(2) Two and one-half pounds rye flour, beat up in half-gallon of cold water, then add 2 gallons of boiling water.

(3) Two and one-half pounds common rock salt, dissolve in 2½ gallons of hot water.

Mix (2) and (3), then pour into (1) and stir until all is well mixed.

This is the whitewash used in large implement factories and recommended by the insurance companies. The above formula gives a product of perfect brush consistency.

Weatherproof Whitewash: (Exteriors) —For buildings, fences, etc.

(1) Sixty-two pounds (1 bushel) quicklime, slake with 12 gallons of hot water.

(2) Two pounds common table salt, 1 pound sulphate of zinc, dissolve in 2 gallons of boiling water.

(3) Two gallons skimmed milk.

Pour (2) into (1), then add the milk (3) and mix thoroughly.

Lighthouse Whitewash.—

(1) Sixty-two pounds (1 bushel) quicklime, slake with 12 gallons of hot water.

(2) Twelve pounds rock salt, dissolve in 6 gallons of boiling water.

(3) Six pounds Portland cement.

Pour (2) into (1) and then add (3).

NOTE: Alum added to a lime whitewash prevents it rubbing off. An ounce to the gallon is sufficient. Flour paste answers the same purpose, but needs zinc sulphate as a preservative.

Molasses renders the lime more soluble and causes it to penetrate the wood or plaster surface; a pint of molasses to 5 gallons of whitewash is sufficient.

Silicate of soda solution (about 35° Baumé) in the proportion of 1 to 10 of whitewash produces a fireproof cement.

A pound of cheap bar soap dissolved in a gallon of boiling water and added to about 5 gallons of thick whitewash will give it a gloss like oil paint.

Capacity of Cisterns in Barrels

Each Foot in Depth of a Circular Cistern

5 ft. in diam holds	4.66 bbls.
6 " " "	6.71 bbls.
7 " " "	9.13 bbls.
8 " " "	11.93 bbls.
9 " " "	15.10 bbls.
10 " " "	18.65 bbls.

Each Foot in Depth of a Square Cistern

5 ft. x 5 ft holds	5.92 bbls.
6 ft. x 6 ft. holds	8.54 bbls.
7 ft. x 7 ft. holds	11.63 bbls.
8 ft. x 8 ft. holds	15.19 bbls.
9 ft. x 9 ft. holds	19.39 bbls.
10 ft x 10 ft. holds	23.74 bbls.

Amount of Barbed Wire Required for Fences

Estimated number of pounds of barbed wire required to fence space or distances mentioned, with one, two or three lines of wire, based upon each pound of wire measuring one rod (16½ feet.)

	One Line Lbs.	2 Lines Lbs.	3 Lines Lbs.
1 square acre	50 2-3	101 1-3	152
1 side of a square acre	12 2-3	25 1-3	38
1 square half-acre..	36	72	108
1 square mile 1280		2560	3840
1 side of a square Mile	320	640	960
1 rod in length	1	2	3
100 rods in length..	100	200	300
100 feet in length..	6 1-16	12 1-8	18 3-16

Questions and Answers About Radio

Is there any device which will show me at a glance whether my battery needs to be charged without messing with a hydrometer?

You can purchase a storage battery with a glass "gauge" at the side, where colored floats indicate the battery's condition constantly. Still another plan is to get a set of three of the new battery testers which replace the vent caps in the cells. Each contains a float and rubber bulb at top.

* * *

How to Stop Howlng

I am troubled with a howling noise on my set. It starts faintly and then gets louder and louder into a roar. If I touch the loud speaker tip or grab hold of the detector tube it stops. How can I prevent the trouble?

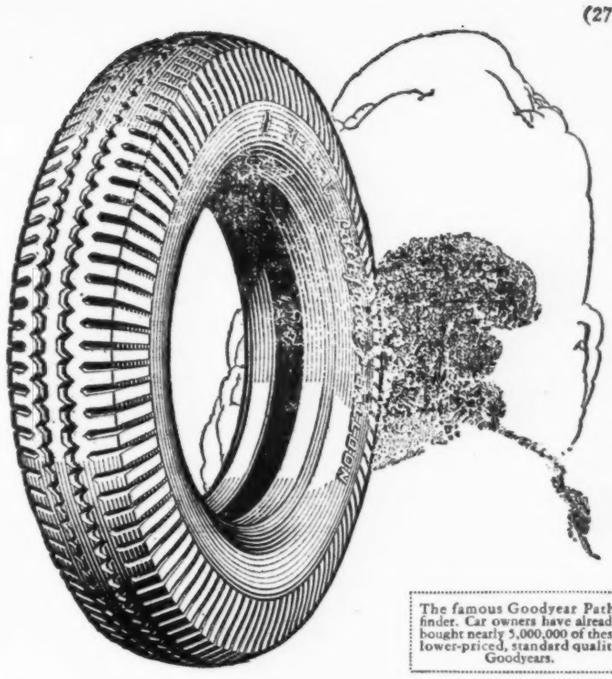
That is a "microphonic" noise. It can be stopped by closing the cabinet up tightly, separating the loud speaker and set more, putting a different tube in the detector socket and also by enclosing the detector tube in a box, metal can, etc. A heavy cardboard box that will fit over the tube and rest on the socket will probably be enough. The trouble is caused by air vibration between the wall of the tube and the speaker. The tube has loose elements, caused either by rough handling, jarring or defect in manufacture.

* * *

Storage Battery at a Distance

Does it matter how long the wires are from the set to the storage battery? I want to have my storage battery in the cellar and my set on the second floor. The connecting wires would have to be about 40 feet long.

Not if you get heavy enough wire. For the average set drawing about 1½ amperes, select well insulated wire having about a No. 12 copper wire—even heavier. Otherwise the resistance will prevent your lighting the tubes brightly enough. The distance will not affect the operation of the set, however.



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One of the biggest benefits to you of the Goodyear policy can not be sent through the mail.

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After the tire is in use he helps you give it the care it should have to deliver the maximum results.

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Goodyear makes a tire to suit *you*—whether you want the incomparable All-Weather Tread Goodyear, the most famous tire in the world, or the lower-priced Goodyear standard quality Pathfinder

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Handy Helps for the Poultryman

Breeds of Poultry

The various breeds of poultry may be divided into three general classes: egg-laying breeds, general purpose fowl, and the meat breeds.

Egg laying breeds are well represented by Leghorns, Anconas, Minorcas and Andalusians.

General purpose breeds include Plymouth Rocks, Wyandottes, Rhode Island Reds, Orpingtons, Houdans, etc.

Meat birds include such as Brahmas, Cochins, Langshans, Dorkings, Cornish and Jersey Black Giants.

There is another method of classifying the more common breeds:

AMERICAN—	FRENCH—
Plymouth Rock	Houdon
Wyandotte	LaFleche
Rhode Island Red	Crevecoeur
Jersey Blk Giant	Faverolles
Dominiques	
Buckeye	ASIATIC—
Java	Brahma
	Cochin
MEDITERRANEAN	Langshan
Leghorn	
Minorca	ENGLISH—
Ancona	Dorking
Andalusian	Orpington
Campine	Cornish
Spanish	Sussex
	Red Cap

The Broody Hen

Put a colored leg band on every hen every time she wants to sit or goes broody. Repeaters are low producers so get rid of them.

An outside yard with plenty of green food, shade and fresh water are best for breaking up the broody hen.

If a broody hen is broken up at once she should go back to work laying in a week or ten days. For every day a hen is allowed to set, it takes about 3 days more to bring her back into production.

Feed plenty of mash and green feed, but very little grain.

Number of Hens to Be Mated with One Rooster

Breed	Hens to One Male
Leghorns	12-18
Plymouth Rocks	8-12
R. I. Reds	8-12
Wyandottes	8-12
Anconas	12-18
Orpingtons	8-12
Brahmas	8-12

For breeders use only hens that have completed one full year of laying. Naturally the best breeders to use are of trap-nested stock. However, the male is fully half the flock so spare no expense in getting the best.

What Lights Will Do

In starting the use of lights on the poultry flock, it is well to know definitely what results to expect. The use of lights is so closely linked with good stock and proper management, and especially correct feeding, that the results obtained will vary with the individual owner and individual flock.

The results of studies in this state and others warrant the following very definite conclusions:

1. Lights properly used will materially increase both the winter and yearly egg production of pullets and hens. However, lights should not be used during the winter on hens to be used for breeding purposes.

2. Hens kept for breeding purposes can be hastened back in production by limited use of lights from January 15 until March without any apparent effect on hatchability of eggs.

3. Lights make it possible to carry early hatched pullets through the first fall and winter production period with much less molting than when lights are not used.

4. Fall production of the laying flock can be maintained at a much higher plane by the use of lights from September 1 to November 1. (If birds are to be used for breeders the following spring the lights should be discontinued abruptly on November 1 and the flock thrown into a molt in order to give sufficient rest before the next hatching season.)

5. Lights properly used will materially increase the labor income per bird for the year.

6. The use of lights on culled, early molting hens to get fall and winter egg production is a questionable practice. If the culls are still on the farm October 1, and room is available, it will doubtless pay to keep them and use lights to get all the eggs possible and sell the hens at a higher price when they stop laying the following spring and summer. It is a wiser plan, however, to sell the cull hens when culled and fill the pens with good birds.

7. Lights properly used on slow maturing pullets will hasten their maturity. However, this practice involves the danger of bringing the birds into production too small.—Ohio Exp. Sta.

Hen House Hints

An abundance of fresh air is one of the most essential factors.

A dry house even if it is a little cold, is infinitely better than a warm house that is damp.

Plenty of sunlight is the best disinfectant you can have.

The houses are best situated in a high, well drained location sheltered from strong winds. If shelter is hard to get, bank the house with corn stalks during the winter months.

Have plenty of roosting space. Leghorns should have 8 inches of roost per bird. The heavier breeds need more.

Do not skimp on mash hoppers. When the hens want food do not make them fight or crowd for it.

There should be about one square foot of glass for every 15 or 20 feet of floor space, and one foot of curtain for every 10 or 12 square feet of floor.

Keep the house thoroughly disinfected to keep mites away. Waste oil drained from the crankcase of autos is good. Spray every crack and crevice thoroughly.

Keep the dropping boards and roosts clean. A thin layer of sand or ashes will be advantageous.

DAMPNESS is the forerunner of roup and other similar poultry diseases. Dampness does not come from the ground alone. The hens consume a vast amount of water and they give off a lot of moisture in their breathing processes. Therefore it is necessary to have the house WELL VENTILATED.

DRAFTS do not give the proper ventilation. They cause sickness and loss. A definite ventilating system will carry off the moisture laden air and replace it with fresh air.

LIGHT is as good a disinfectant as we have. Let a lot of it in. If the weather is bad, have drops that can be let down to protect the birds.

Southern exposure is to be desired. Protect the birds from the north, east and west.

Use plenty of litter. The litter should be absolutely free from mold, as this may cause heavy mortality.

Concrete foundations are rat proof.

Extra long houses without partitions are drafty.

Under our conditions, at least half of the front of the house can be open.

Darkened nests are to be desired. They keep clean.

Do not crowd too many birds in one house. Allow 4 square feet of floor space for every bird. Crowding may work for a while but it is like skating on thin ice.

Before you build get all of the available help possible. There are any number of sources of information to which you may turn, where you can get plans, specifications, etc.

How to Cull Hens

Culling for Present Production

	CHARACTER LAYING HEN	NON-LAYING HEN
VENT	Large, dilated, oblong, moist.	Small, contracted, round, dry.
PELVIC BONES	Flexible and wide apart	Rigid, close together.
COMB	Large, red, full, glossy	Small, pale, scaly.
WATTLES AND EAR LOBES	Prominent, soft, smooth.	Inconspicuous, rough and dry.

Judging Past Production

	LONG LAYING PERIOD	SHORT LAYING PERIOD
VENT	Bluish white.	Flesh colored.
EYELIDS	Thin and edges white	Thick, yellow tinted.
EYE	Prominent, keen, sparkling.	Listless, sunken.
EAR LOBES	Enamel white.	Yellow tinted.
BEAK	Pearly white.	Yellow tinted.
FACE	Clean cut, sunken.	Full, well-fleshed, yellowish.
SHANKS	White, flat, thin, creased	Yellow, round, smooth
PLUMAGE	Worn, soiled, lifeless, close-feathered.	Sings of molting, loose feathered.

Incubating Periods

	Days	Variation
Hen	21	19-23
Goose	32	29-34
Duck	28	27-32
Turkey	28	25-30
Guinea	28	26-31
Pigeon	17	16-19
Pheasant	24	23-25

Hatching Hints

Hatch stock that is better than your own.

Eggs for hatching should be gathered frequently and held at a uniform temperature, about 50 degrees.

Eggs held two weeks will not hatch out as vigorous chicks as eggs held for a shorter period.

The best place to operate an incubator is in a cellar that is dry and free of foreign odors.

See that the incubator is level in all directions.

The cellar should be well ventilated but avoid draft windows and doors.

Run the incubator a few days before you put the eggs in it. This will permit perfect regulation and reduce the hazards that accompanies the regulation of the machine after the eggs are in it, which often results in the loss of the whole setting. Follow the directions of the manufacturer.

Test the eggs on the 7th and 14th days.

Do not be hasty about removing chicks from the incubator.

Turn the eggs before you care for the incubator lamp. Tend to the lamp at regular hours.

If you set hens, use insect powder freely for lice.

Try them on china eggs before you put hens on valuable eggs. Sometimes a hen changes her mind.

Toe-mark the chicks. Chicks of different ages should not be mixed.

If you use the infertile eggs as chick feed, be sure you boil the infertile eggs for at least 25 minutes to avoid the spread of bacillary white diarrhea.

Baby Chick Hints

When buying hatching eggs or baby chicks, be sure that you are getting stock that is better than your own.

Run the brooder for a few days before you put the eggs in it.

Buying baby chicks eliminates the hazards of hatching, makes brooding at the right time possible, and starts you off with the number of chicks you want.

Do not feed the chicks for 36 hours.

Keep the chicks free of lice.

Confine the chicks close to the brooder for a few days by means of a wire screen, before you give them the run of the house.

Get the chicks out doors in ten days if the weather permits. Use cod liver oil to prevent leg weakness. Use some form of milk in the chick's diet.

Don't overfeed. Hungry chicks are said to be the healthiest.

Don't buy a chick feed because it is cheap.

Feed 100 Chicks Will Consume for the First Six Weeks

Week	Grain	Mash
1st	1.3 lbs.	.....
2nd	1.4 lbs.	1.4 lbs.
3rd	2.0 lbs.	2.0 lbs.
4th	2.7 lbs.	2.7 lbs.
5th	3.5 lbs.	3.5 lbs.
6th	4.1 lbs.	4.1 lbs.

Green feed, some form of milk to maintain steady growth, and cod liver oil for leg weakness at the rate of 1 pint per 100 lbs. of mash.

The Purdue Experiment Station has found that it takes slightly more than 5½ pounds of grain and about the same quantity of milk to grow White Leghorn broilers to twelve weeks of age. It took nine to ten weeks to produce a 2-pound White Rock broiler and each broiler had about 5 pounds of grain and 7 pounds of milk. These results were obtained on a four-year experiment with 1,000 chicks.

Don't skimp on feed. You can't starve profit from chickens. Feed the birds for early growth. The first gains are the cheapest.

Fattening Broilers

As soon as the cockerels can be identified, they should be separated from the pullets. To get the most out of the birds, they should be marketed in a well finished condition. To do this it is recommended that they be put on a fattening ration consisting of 60 lbs. of cornmeal and 40 lbs. of Red Dog flour, which may be moistened with semi-solid buttermilk which has been diluted to the consistency of thin cream. This mixture is fed about three times a day. When the birds begin to show a lack of appetite, that is the time they should be shipped, before they go off their feed. This usually occurs during the second week of the feeding, anywhere from eight to twelve days.

Strict attention should be given to the water supply, range and shade. It is a lot of bother, but it pays to keep the drinking fountains clean and to avoid contraction of disease.

Common Disinfectants for Hen Yard and House

Disinfectant	Strength used	Purpose	Cautions
Bichloride of mercury	1-1000	Soil, 1 gal. to each 10 sq. ft.	Never use metals. Do not allow to stand a long time in wooden containers. Do not use to disinfect albuminous material. After use on soil keep fowls off run for 1 week
	1-6000	Drinking water	Containers should be of earthenware, never metal or wood.
Unslaked lime	Sprinkled on soil	Poultry runs, filthy puddle, manure.	Sprinkle with water after placing on soil. Keep fowls off runs for 1 week.
Whitewash	Slake 4 lbs. lime with 1 qt. water and dilute to proper consistency	Interior of houses.	Use freshly prepared.
Sulfur	Burn 5 lbs. to every 1000 cu. feet of space.	Poultry houses.	House must be tight, temp. above 60 degrees, and sufficient moisture. Attacks metals therefore should not be used in incubators.
"Chlorinated lime"	20 per cent solutions.	Droppings, filthy pools, dropping boards. Wash drinking vessels. Good deodorant.	Not often used as a general disinfectant.
Crude carbolic acid	2 to 5 per cent solution	Interior of poultry houses. Incubators.	
Formaldehyde	5 per cent.	Interior of houses, coops, etc. Incubators.	Irritating to mucous membranes. Hardens the skin.
Formaldehyde gas	1½ lbs. potassium permanganate, 3 pts. formaldehyde, 1000 cu. ft.	Poultry houses.	Tight house, temp. 60 degrees or above. Sufficient moisture.

Fighting Poultry Lice and Mites

CLEAN quarters are the first essential in fighting lice and mites, which increase and are always accompanied by filth which includes droppings, bad eggs or rotting organic matter. They accumulate in corners and cracks in the walls and dropping boards. Plenty of light will help keep down the numbers of the parasites. They thrive in darkness.

When cleaning and disinfecting the house everything removable should be taken outside of the house and scraped and sprayed thoroughly. The walls, ceilings and floors should be given a thorough sweeping followed by a spraying of some form of creosote. There are any number of henhouse sprays on the market. According to the U. S. Department of Agriculture coal tar products may impart an odor to the flesh of fowls and therefore they should be kept away from the odor a couple of weeks before killing.

A Home-Made Kerosene Spray

A good insecticide can be made by dissolving a half pound of laundry soap, shaved fine, in a gallon of water. The soap is first dissolved in the water and is brought to a boiling point. When the soap is dissolved and the water is still hot, remove it from the fire and add two gallons of kerosene oil. Churn the mixture violently until it becomes a creamy white emulsion. A good way to do this is to pump the mixture through a force pump back into the pail. This makes a perfect mixture.

Take three gallons of this stock mixture and add to it 10 1/3 gallons of water to make a total of 13 1/3 gallons of spray material. Use a spray pump and force the spray into all the cracks and crevices. After a week give it another dose.

Treat the Hen Herself

Sodium floride is the best substance to control lice on fowls. It is a white dry powder that will keep indefinitely in a dry place if it is in a tight bottle. It is poisonous so keep it away from all food supplies. Furthermore it irritates the nasal passage and consequently when putting it on a fowl it is best to hold the fowl on a table instead of in the lap so that the powder will not burn the skin. You can protect your nose and throat by wearing a piece of gauze or muslin as a guard.

Apply sodium floride a pinch at a time on the head, on the neck, two on the back, one under each wing, one on the breast and one below the vent. Work the powder down through the feathers into the skin.

How to Make "Cornell Powder"

Another good powder for destroying lice is known as the Cornell powder which is made by adding a quarter of a pint of crude carbolic acid in a cup to three-quarters of a pint of gasoline. Place in a shallow pan or tray 2½ pounds of plaster of paris. Add the acid and gasoline already mixed, to the plaster of paris and mix thoroughly. The whole mixture is rubbed through a wire screen on to a sheet of paper and allowed to stand a couple of hours or until thoroughly dry. Keep it away from all heat and flame. The powder should be kept in a closed can or jar so that it will retain its strength. This powder can be applied with the fingers and especially work well in under the feathers. A pinch of this powder is sufficient for each fowl.

Blue Ointment

Blue ointment is a good remedy for poultry lice. For old fowls a small portion about the size of a pea should be rubbed directly on the flesh, not under the feathers, just below the vent. Do not get any of the ointment in the vent. If blue ointment is not available, common mercuric ointment can be thoroughly mixed with an equal amount of vaseline before it is applied to the fowl. Salves are not very popular because they make the feathers very messy and rather dirty.

Call upon your farm service hardware store and they will show you a number of good commercial materials.

How to Get Rid of Rats

Powdered barium carbonate is one of the best poisons for destroying rats. It is inexpensive, odorless, and tasteless, and baits containing it are readily taken by the pests. It is slow in action, and the rats usually have an opportunity to leave the premises in search of water or return to their burrows before they die.

There are various kinds of baits that can be used, including:

(1) Meats such as Hamburg steak, liver, and bacon.
(2) Cheese.
(3) Vegetables or fruit such as sliced apple, canned corn or baked sweetpotato.
(4) Cereals, such as rolled oats, corn meal bread, etc.

The powdered barium carbonate is thoroughly mixed and worked into the soft baits, in the proportion of one part of the poison to four parts of the selected bait. Baits moistened to the consistency of soft mush are particularly acceptable to rats in dry weather.

Barium carbonate is a relatively mild poison, but the dangers from accidents cannot be overemphasized. Keep it out of the reach of children, irresponsible persons, domestic animals and fowls.

Antidotes. Give an emetic consisting of either mustard or salt dissolved in warm water. Induce vomiting by inserting the finger in the back of the throat. Follow vomiting with liberal doses of Epsom salts.

How Many Eggs Your Hens Should Lay

The following is the monthly egg-laying standard of the New Jersey State College of Agriculture and shows what your hens should be producing to be up to standard and on a paying basis. Count your hens and keep records.

Month	Eggs per hen	Month	Eggs per hen
January	10	July	16
February	12	August	13
March	19	September	7
April	21	October	6
May	20	November	8
June	18	December	10

When the Chicks Go on Range

Much of the success in the rearing of young poultry depends on having new clean range each season, with about three or four years of rotation. Nothing equals clover or alfalfa sod, with an abundance of shade.

Do not crowd the chicks in the colony houses. Crowding is as bad as poor ventilation or chilling, for they all end in the loss of birds.

Disinfect the colony houses, feed hoppers, drinking fountains, etc. There are plenty of good disinfectants on the market, or you can use mercuric bichloride at the rate of 2 oz. to 15 gal. of water, but see that the powder itself is safely guarded for it is a deadly poison.

To guard against coccidiosis and other chick diseases, give the chicks their mash, grit, and other feed in troughs or feeding platforms that can be kept clean.

Keep the colony house clean. Cleaning once a week is not too often, three times every two weeks is better. Shavings are very good on the floor, the heavier droppings working downward leaving the surface clean and dry.

Give the chicks as much direct sunlight as soon as practical. Sun shining through windows is *not* direct sunlight. Include cod liver oil in the ration until the chicks can get the benefit of the sunlight.

Good ventilation and fresh air, not by drafts, are essential.

Give the young stock every consideration, for remember, they are your future layers.

When the Pullets Mature

As the pullets reach maturity, the ration should be very gradually modified to finish them off, getting the necessary body weight to put them in producing condition. The feed should consist of more grain than mash, the mash being modified so that it contains less beef scrap than the growing ration. By no means retard their growth and development, but they should be held off production until their size and body weight are right.

When the pullets have started laying they should go into the laying house from the range, the purpose being to get them to eat more in confinement. This will have a tendency of keeping them up to weight and at the same time preventing or at least retarding a molt.

As the young birds mature and when they are still on range keep a close eye on them at night. See that they do not crowd. This will help to avoid colds. At the same time try to keep them from getting wet.—(*Continued on page* 30)

Profitable Results from Feeding
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and DIAMOND CORN GLUTEN MEAL
to Poultry

USING Buffalo Corn Gluten Feed as 35% of his growing mash, Mr. J. C. Dunn of Waterford, Conn., fed 20 cockerels for 2 months in a special test. After these birds had been dressed, picked and drawn, the 20 weighed 137 lbs. or nearly 7 lbs. apiece.

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You cannot afford, especially at this season of the year, to overlook these records in growth and egg production. Such records are possible with Buffalo and Diamond because these feeds are so rich in total digestible nutrients and because they furnish plenty of protein that is easily convertible by poultry into meat and eggs. Moreover, this protein is furnished more cheaply than the protein derived from animal feeds.

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Ideal for HOT BEDS

Much Cheaper Than Glass

GLASS CLOTH is the cheapest and best covering for hot beds. Costs a fraction as much as glass and gives far better results. Vegetables and flowers mature weeks earlier and produce bigger yields because GLASS CLOTH admits the life giving ultra-violet rays of the sun. (Plain glass stops them.) Plants grow stronger and hardier and transplant better. GLASS CLOTH holds the heat of the sun and throws it to all parts of the frame. Under glass, plants become weak and spindley for want of ultra-violet light. Try GLASS CLOTH on your hot beds this year. Take advantage of the low trial offer price below.

Admits Ultra-Violet Rays, Prevents Rickets, Leg Weakness, Death Loss

Fred Turner
To recover of GlassCloth

If you want unusual success with your chicks this year raise them under GLASS CLOTH. This wonder material admits the life giving ultra-violet energy rays of the sun. (Plain glass stops them) Science has discovered these rays prevent rickets, soft-heas, leg weakness and many other chick troubles. Death loss from these causes is stopped. Ultra-violet rays enter the body, supplying Vitamine D and speeding up the building of bone and tissue. Chicks thrive amazingly and grow very fast. If you want to raise every chick, if you want early broil-ers and layers, put GLASS CLOTH in your brooder house windows and build a GLASS CLOTH scratch shed where the chicks can run and exercise in real sunlight. It is nature's health remedy. All you need is a roll of GLASS CLOTH and a few scraps of lumber. Millions of yards in use today. Success everywhere. Experts recommend it. Repays its cost many times a season. Take advantage of the trial offer below.

The Ames Test

Experts and practical poultry raisers everywhere recommend GLASS CLOTH. In a test at Ames College 25 per cent of the chicks under plain glass died, while all under GLASS CLOTH lived and grew rapidly. The illustration at the left is taken from an actual photograph, showing the difference in two chicks that had the same start and the same care, except that the big one had plenty of ultra-violet light and the runt had none. For big success with chicks give them ultra-violet energy admitted through a large area of GLASS CLOTH.

Accept No Imitations

Genuine, durable GLASS CLOTH is made only by Turner Bros., under exclusive patents. No other concern can copy our process. No other has the same weather resisting formula. Avoid imitations. Real GLASS CLOTH is a strong fabric specially treated to make it transparent, waterproof and weatherproof. Originated in 1916 and proven by eleven years success. You will know it by its quality. So much cheaper than glass it has won wide popularity all over the United States and Europe.

SPECIAL TRIAL OFFER

Send $5.00 for big roll 45 ft. long and 36 in. wide, postpaid. (Will cover scratch shed 9x15 ft.) If, after ten days use, you do not find it better than glass or any substitute, return it and we will refund your money. For smaller quantity send $3.50 for 30 ft. roll, or $2.25 for 18 ft. roll. Common sense instructions, "Feeding for Eggs," with each order. Catalog illustrating uses on request. (Many dealers sell Glass Cloth.)

Mail the COUPON!

TURNER BROS., Dept. 0111
Bladen, Nebr., Wellington, Ohio

I enclose $..... for which send me postpaid..... rolls of GLASS CLOTH at the advertised trial offer price. If not satisfied after 10 days use I may return it and you will refund my money.

Name .....

Address .....

Town ..... State .....

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Turner Bros.

Dept. 0111

Bladen, Nebr. Wellington, Ohio

When Pullets Mature

(*Continued from page 29*)

Before the birds go into the laying house, thoroughly clean and disinfect the quarters.

Do not omit a good mineral mixture.

Once the birds go on a laying ration, be very cautious about any changes lest the birds be thrown into an untimely molt.

Preserving Eggs in Water Glass

To preserve 15 dozen eggs in water glass, follow the directions given below:

(1) Clean, scald and allow to dry, a 5 gallon earthenware crock.

(2) Heat 10 to 12 quarts of water to boiling point and then allow to cool.

(3) When cool, measure out 9 quarts of water, place in crock and add one (1) quart of sodium silicate (water glass) which can be purchased at the local drug or supply store. Stir thoroughly. The solution is now ready for the eggs. They may be placed in the solution all at the same time or they may be put in from time to time. Have solution cover eggs by 2 inches. Keep in cool place.

It is very essential that only perfect eggs be so stored. Sterile eggs are to be preferred. Take the roosters away from the flock two or three weeks previous to storing eggs. Sterile eggs will not hatch and will therefore keep better.

Do not store any cracked eggs. Candle every egg you "put down". That will eliminate all stale or shrunken yolks.

By using water glass you can keep your small undesirable eggs at home and use them for cooking purposes, at the same time shipping only your better grade eggs.

Mineral Mixture for Hens

The following mineral mixture is recommended by the Connecticut College of Agriculture for hens that are on a ration that contains a high protein, boneless meat scrap or when the meat scrap is withheld.

Salt	15 lbs.
Sulphur	10 lbs.
Calcium carbonate (ground limestone)	10 lbs.
Bone meal	50 lbs.
Unleached wood ashes	5 lbs.
Charcoal	10 lbs.

Grain Rations for Laying Hens

The following are some grain rations recommended for laying hens. We use the same reservations in recommending in home mixture as in the case of baby chick feeds. It is all a matter of circumstance.

Cornell Ration

Scratch Grain	Mash Mixture
500 pounds cracked corn	100 pounds yellow corn meal
200 pounds wheat	100 pounds ground heavy oats or ground barley
200 pounds barley	100 pounds meat scrap (50-55 per cent protein)
100 pounds heavy oats*	3 pounds salt
100 pounds wheat bran	
100 pounds flour	

*If heavy oats (40 pounds or better) cannot be obtained, omit the oats from the scratch grain.

It must be borne in mind that in addition to the grain rations, the College recommends the use of green food, milk, clean range or mineral feeds, grit, etc.

New Jersey Ration

The New Jersey State College of Agriculture recommends the following mash grain ration for laying hens:

Laying Mash

100 lbs. corn meal
100 lbs. wheat bran
100 lbs. ground heavy oats
100 lbs. high grade middlings
100 lbs. meat scrap (50% to 55% protein)

Grain Ration for Layers

200 lbs. corn
100 lbs. wheat
100 lbs. oats (to be added during the summer time)

During the winter the ration is supplemented with a moist mash at noon, consisting of equal parts corn meal, ground rolled oats and semi-solid buttermilk. Three quarts of this mixture is fed to 100 birds. This is used in the New Jersey Egg Laying Contest at Vineland.

Farmingdale Laying Formulas

Scratch Grain

200 lbs. cracked yellow corn (use half whole corn in winter)
100 lbs. wheat

(*See opposite page*)

BABY CHICKS

CHICKS: OUR 11th YEAR

$10 per Hundred & up. From good healthy Free Range Stock. Rocks, Reds, Wyan., Leg., Mixed. Send for Circular and Price List. Delivery Guaranteed.

Longs Reliable Hatchery
Millerstown, Pa Box 12

Pure Bred Chicks

From High Egg Record Flocks

All leading varieties. American Cert'd Cold. 21 year reliability. Large and small poultry raisers buy our strong healthy baby chicks which are easy to raise. Write today for free catalog and price list. Quick delivery and lowest prices. Sent prepaid.

100% live delivery guaranteed

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HIGH FLOCK AVERAGES

Mean PROFITS. RUPP'S INVINCIBLE CHICKS. CERT-O-CULD, money-back FLOCKS. 22 breeds for Pure Bred Breeds. POSTPAID. 100% Live Delivery. Write today for FREE LITERATURE before ordering CHICKS. THE ARCHBOLD HATCHERY, INC., Box 19 ARCHBOLD, OHIO. E. E. RUPP, Mgr.

	March and April Prices	100	500	1000
	Parks Strain W. Leghorns	$12	$57.50	$110
	Sterling Barred Rocks	12	57.50	110
	Ramm's Barred Rocks	14	67.50	130
	R. I. Reds	14	67.50	130
	Black Minorcas	14	67.50	130
	Odds and Ends	10	47.50	90

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You pay for your chicks when you see them. Pure-bred stock of high quality. Carefully selected breeding birds. Our big illustrated catalog tells all the story. Write for it today.

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White Wyandottes from Madison Strain White and Barred Rocks, R. I. Reds. Leghorns. Price list upon request.

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America's best free range breeders, with a reputation of higher quality at 7c each up. Leghorns, Anconas, Rocks, Reds, Wyandottes, Giants, Orpingtons. Illustrated catalogue.

For a Safe place to buy chicks write

BEIDELTON FARMS - WASHINGTONVILLE, PA.

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Pay for chicks when you get them. Write for big illustrated catalog. Fine pure-bred stock.

WE SHIP C.O.D.

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CHICKS S. C. W. Leg. $12. Barred Rocks $14. Mixed $10. per hundred. Post-paid. Bred under my supervision from free range stock. Circular free.
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BLUE HEN

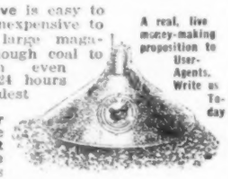
This New BLUE HEN COLONY BROODER

mothers ALL your chicks to a healthy maturity

Its new hover is large enough to cover its rated chick capacity—and it spreads an even healthy heat from the stove to its outside edge.

Its new stove is easy to control and inexpensive to operate—the large magazine holds enough coal to maintain an even temperature 24 hours in the coldest weather.

It pays for itself in the extra chicks it raises and the labor it saves you.



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STURDY CHICKS. LEADING BREEDS BEST BLOOD. 9½c UP. WRITE TODAY.

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Heavy Layers
Culled Flocks

Special Inducements for Early Orders. Catalogue Free.

BABY CHICKS ROCKS, REDS and LEGHORNS

Bred for Egg Production 15c Each

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Commercial Poultry Farms CHICKS AGAIN.

Flocks Culled and weekly Inspected. Just ask for our free Circular and Price list of our free range High Quality Breeds, etc. COMMERCIAL POULTRY FARMS, E. Ring, Prop. MYERSTOWN, PA.

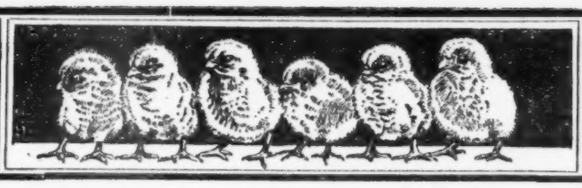
Here IS money in CHICKS

MANY farmers have found one of their important sources of income to be from the raising of chicks. Experience has taught that to do this successfully and profitably the proper equipment, conveniences and comfort for the brood must be provided. Haphazard methods, or any old kind of housing, make it troublesome, consume too much time and seldom leave a profit.

A small investment in the right kind of brooders, incubators, houses and runs will pay you fine profit. Your "Farm Service" Hardware Store can supply you with tried and tested equipment that has proven its value in your own neighborhood. Go to a "tag" store and personally inspect the new or additional equipment you need. He will give you the right prices as well as a dependable outfit.

Poultry netting, heaters, waterers and other things you will need are at the same store. It will pay you to buy your whole outfit there. Look for the "tag" in the window.

Your "Farm Service" Hardware Man.

BABY  CHICKS

HOW TO GET 200 EGGS A YEAR

WRITE today for your copy of this fully illustrated fact-book. Mailed free to anyone who keeps poultry. *How to Get 200 Eggs a Year* is published and distributed by The Kerr Chickeries, Inc., producers of quality chicks for twenty years.

In the Storr's 1926-27 Contest the Kerr pen was highest (week ending December 12th) for the entire 140 entries, with an 84% lay. A Kerr pen was high pen for three consecutive weeks at the Maryland 1926-27 Contest. In the New York State Contest a Kerr Plymouth Rock was high bird of her breed, tying for first honors in the entire contest.

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Frenchtown, N. J. — Springfield, Mass.
Trenton, N. J. — Syracuse, N. Y.

Where will you buy your

Leghorn Chicks?

The stock you buy will be no better than the parent stock from which it is hatched.

Your next year's profits depend entirely on the kind of stock you buy right now. Don't be satisfied with anything less than.

MAXIMUM PROFITS

You, too, can be a really successful poultryman.

Pay a visit to

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where you will see 400 acres devoted to the poultry business. See our large birds lay large eggs. See our thousands of pedigreed trapnested breeders. If you can't pay us a visit, send for our 80-page catalog that describes our plant and methods.

Order chicks at once if you want dependable stock this year that will live and grow, such as you have never had before.

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85 Forest St., Methuen, Mass.

LEGHORN CHICKS

Giant Heavyweight

Large Type, Standard-bred breeders you have always wanted. Get big healthy chicks from these two and three year old heavy winter laying birds. Hatch only large sized pure white eggs.

Give you either Hollywood, Tancred or Barron separate strains.

EXTRA DISCOUNT OFFER
Free Price List

Telegraph for price and quick shipping date

Farm Service Route A 2 Tyrone, Pa.

Dry Mash

100 lbs. wheat bran
100 lbs. yellow corn meal (not de-germinated)
100 lbs. Red Dog flour (or a fancy grade of flour middlings)
100 lbs. ground hulled oats (feeding oatmeal or reground rolled oats may be used)
50 lbs. alfalfa leaf meal (about 22% protein, 18% or less fiber)
25 lbs. mineral mixture
15 lbs. granulated charcoal
50 lbs. high grade meat scrap (55%-60% protein)
3 lbs. powdered sulphur
3 lbs. fine feeding salt

As in the case of other institutions, there are other factors brought into the feeding practice in addition to the mere grain ration. It is recommended that the reader communicate with the various institutions for all of the literature on the subject of poultry feeding.

Feeds for Hens and Chicks

The advisability of mixing a poultry feed at home depends solely upon local conditions and environments. Frequently it is quite impossible to obtain the necessary constituents. It is a matter of record from our experiment stations that very often the ingredients vary in their analysis. Furthermore, much depends on the amount of labor a poultryman has available. There are some poultrymen who find that it pays to mix their own rations. At the same time we know of a great many large poultry plants which have given up the idea of home mixing, using the better grades of commercially mixed feeds.

The following are the mash and hard grain rations recommended by the New York State College of Agriculture:

Cornell Chick Ration

Grain Mixture No. 1

5 lbs. cracked corn (fine)
3 lbs. cracked wheat
2 lbs. pinhead oats, steel-cut oats, or oat flakes

Grain Mixture No. 2

6 lbs. cracked corn (medium)
4 lbs. wheat

Grain Mixture No. 3

500 lbs. cracked corn
200 lbs. barley
200 lbs. wheat
100 lbs. heavy oats (if heavy oats, 40 lbs. or better, cannot be obtained, omit the oats).

Mash Mixture

25 lbs. yellow corn meal
20 lbs. wheat bran
20 lbs. flour wheat middlings
10 lbs. fine ground heavy oats.*
10 lbs. fine ground meat scrap (50%-55% protein)
5 lbs. bone meal
10 lbs. dried milk products (use part buttermilk)
½ lb. fine salt

*If reground heavy oats cannot be obtained, omit them and increase the corn meal from 25 to 35 pounds.

(Start with "grain mixture 1" at three days old. Change to "mixture 2" at four to six weeks and to "mixture 3" at three months. Make changes gradually.)

New Jersey Chick Ration

The following are the rations recommended by the New Jersey Agricultural Experiment Station at New Brunswick, N. J.:

Growing Mash

100 lbs. ground whole corn
100 lbs. wheat bran
100 lbs. Red Dog flour
100 lbs. ground rolled oats
50 lbs. beef scrap
25 lbs. dried buttermilk
10 lbs. oyster shell meal
5 lbs. salt
10 lbs. cod liver oil (to be added weekly)

Grain Mixture

200 lbs. finely cracked corn
100 lbs. cracked wheat

The size of the grain is increased with the age of the bird.

The chick grain and mash mixtures are used from the first feeding until the birds are ready for the laying house. The New Jersey authorities believe in keeping the young stock growing continually and at a more or less rapid pace. Furthermore, they do not believe in using a poor quality feed when a

(Continued on page 32)

HILLPOT Quality Chicks

The Famous Extra-Profit Strains

Success in the poultry business has been made more certain with my specially hardy, specially productive Hillpot Quality Chicks.

Put the same time and money on these Chicks that you would on ordinary strains and just see how much greater your profits will be.

MY FREE BOOK GIVES THE PROOFS

Send for this beautiful, big, new book. It is full of valuable information and contains the proofs from *actual experience* of the extra money-making powers of Hillpot Quality Chicks.

LEGHORNS REDS ROCKS WYANDOTTES

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Buy Chicks from

New York State Certified Breeders

and get the best in vitality and heavy production.

The New York State Certification standard is one of the highest in the United States.

SOME OF THE REQUIREMENTS.

1—Only high egg producers will certify.
2—Only yearling hens and older (No pullets allowed certification).
3—Must be up to standard weight both male and female.
4—Eggs for all incubation purposes must weigh at least 24 oz. per dozen and must be pure white or brown.

Send for free catalogue giving list of members and other valuable information.

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Our 18th Year For 17 Years we have culled our flocks for egg production and quality

If better chicks could be hatched for the money we would be hatching them. There are reasons why we have thousands of satisfied customers, and that we have never been able to supply all the demand for our chicks in the past seventeen years. **Our reliable chicks possess high egg producing qualities.** Send us your order and you will be another one of our satisfied customers.

Fine Illustrated Catalog Free

Get our special combined offer on chicks and brooder stoves. We hatch thirteen varieties. Fifty Thousand chicks per week. Valuable free book on Chicks and Poultry with each order of $10.00 or more.

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THE BIG FLUFFY KIND that jump out of the box when you get them. From pure bred, high egg record, inspected and culled flocks.

Live delivery guaranteed. Prices on:	25	50	100
S. C. White & Brown Leg.	$3.75	$6.75	$12.50
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White Rocks, White Wyandottes	4.75	8.75	16.50
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Catalog giving full particulars and prices on larger lots free on request. Write now.

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Breed squabs and make money. Sold by millions at higher prices than chickens. Write at once for two free books telling how to do it. One is 40 pages printed in colors, other 32 pages. Ask for Books 3 and 4. You will be surprised. **Plymouth Rock Squab Company, 334 H Street, Melrose Highlands, Massachusetts.** Established 26 years. *Founder of the Squab Industry 26 Years Ago. Largest Business in the World in Pigeons and Pigeon Supplies. We ship breeding stock everywhere on three months' trial.*

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All breeders culled and banded with state bands, and state inspected.

Priced as follows,	100	500	1000
Barred & White Rocks, R. C. & S. C. Reds	$15.00	$72.50	$140.00
White and Silver Wyan. Buff Orpingtons and S. C. R. I. Whites	16.00	77.50	150.00
S. C. White and Br. Leghorns, Anconas	13.00	62.50	120.00

Assorted all Varieties 10c straight. All Heavy 12c straight.

100% live arrival guaranteed. Postage paid, Bank Ref.

MODERN HATCHERY, Box AA, MT. BLANCHARD, OHIO

BABY CHICKS hatched by the best system of incubation from high class bred-to-lay stock. White, Brown, Buff Leghorns, Anconas $14.00 per 100; Barred, Buff Rocks, Black Minorcas $16.00 per 100; White Rocks, White Wyandottes $17.00 per 100; Heavy Broilers $12.00 per 100; Light Broilers $10.00 per 100; Jersey Giants $20.00 per 100. Write for prices on 500 and 1000 lots; on less than 100 add 25c to order. Safe delivery guaranteed by parcel post.

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Member of the International Baby Chick Association.

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From well developed, strong, healthy, layers. S. C. Eng. White and Brown Leghorns; Sheppard's Anconas; R. I. Reds; and Assorted Chicks. No money down. Pay a week before chicks are shipped. 100% live delivery. Postpaid. Catalog free.

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BABY CHICKS

100% LIVE DELIVERY — POSTAGE PREPAID

	25	50	100
Wh. & Br. Leghorns	$3.50	$6.50	$12.00
Buff & Bl. Leghorns	3.50	6.50	12.00
Anconas	3.75	7.00	13.00
S. C & R. C. Reds	4.00	7.50	14.00
Barred Rocks	4.00	7.50	14.00
SC. Bl. Minorcas	4.00	7.50	14.00
Buff & Wh. Rocks	4.00	7.50	14.00
Wh. & S. L. Wyandottes	4.50	8.50	16.00
Buff Orpingtons	4.50	8.50	16.00

All absolutely first class purebred stock from culled flocks. Prompt shipments.

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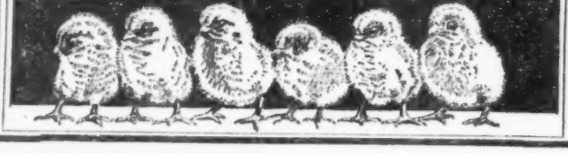
They cost no more and pay you better. Every flock culled for health, egg production and legbanded by O. S. University expert. White Leghorns $13, R. Rock, W. Rock, R. I. Reds $15, R. Minorcas, W. Wyandottes $16, Heavy Assorted $12, W. Pekin Ducklings $30 a hundred. Live delivery guaranteed. Postage Prepaid. Catalog Free! Order from this ad. SOUDERS IDEAL HATCHERY, Box H, Bucyrus, O.

BABY CHICKS



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100% Live Arrival Guaranteed. Postpaid prices on

	25	50	100	500	1000
S. C. White, Buff, Brown, Black and R. C. Brown Leghorns	$3.75	$7.00	$13.00	$60.00	$120.00
Barred and White Rocks, R. I. Reds, S. C. Anconas	4.50	8.00	15.00	72.00	138.00
S. C. Black Minorcas, White Wyandottes, Buff Orpingtons	4.75	8.50	16.00	77.00	144.00
Black Langshans, Silver Wyandottes, R. I. Whites	4.75	8.50	16.00	77.00	144.00
Golden and Columbian Wyandottes, S. C. White Minorcas	6.00	11.00	20.00	98.00	195.00
Light Brahmas, Blue Andalusians, Partridge Rocks, R. C. Anconas	6.00	11.00	20.00	98.00	195.00

Mixed Assorted, $10 per 100. Heavy Assorted, $15 per 100. All other Breeds priced reasonable. BIG, FINE, COLOR-PLATE POULTRY BOOK, FREE, stamps appreciated. Don't fail to get this GREAT BOOK and invest your money this season in FAMOUS NABOB 18K STRAINS. The most profitable investment you can make in the Poultry field right now.

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100% Live Delivery Guaranteed, Prepaid

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Barron White Leghorns, mated with Impt. Males	$10.50	$20.00	$95.00	$180.00
Extra Quality Barron White Leghorns	7.50	14.00	67.00	130.00
White, Brown, Black and Buff Leghorns, Anconas	7.00	13.00	62.00	120.00
Barred and White Rocks, S. C. and R. C. Reds, Black Minorcas	8.00	15.00	72.00	140.00
White Wyandot, Purke Ped. Barred Rocks (PC-328)	8.50	16.00	77.00	150.00
White and Buff Minorcas, 100, $70. Light Mixed, 50, $5; 100, $9.50. Heavy Mixed, 50, $6.50; 100, $12. If you				

have never purchased 20TH CENTURY CHICKS give them a trial in 1927 and be convinced of the High Quality we produce. Get our 1927 Catalog sure or order direct from this ad Member A. B. C. P. A. Ref.—Commercial Bank.

20TH CENTURY HATCHERY, Box R, NEW WASHINGTON, OHIO

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EVERY CHICK BUYER SHOULD KNOW ABOUT HOYTVILLE CHICKS

OUR big catalog tells all about our fine, healthy baby chicks. Beautifully illustrated. Your copy sent on request.

OHIO ACCREDITED CHICKS Every bird in our breeding flocks is banded and a record kept. Our flocks inspected by experts trained and authorized by Poultry Dept. Ohio State University.

GUARANTEED CHICKS Find out about our chick guarantee plan. You can't lose on our chicks!

HOYTVILLE HATCHERY BOX 10 HOYTVILLE, OHIO

AMERICAN CHICKERIES

1,000,000 Full Blooded "AMERICAN" Quality Chicks. Bred from Breeders that have the LAYING HABIT. MAIL YOUR ORDER NOW.

	50	100	500	1000
Mixed or Broilers	$6.00	$11.00	$53.00	$100.00
American or Eng. White Leghorns	6.75	13.00	62.00	120.00
Hollywood Wh. Leghorns, Br. & Buff Leghorns,	7.75	14.00	67.00	130.00
Tancred Wh. Leghorns, Barred Rocks, Anconas,	7.75	15.00	72.00	140.00
Parks' Rocks, R. I. Reds, White Rocks,	8.25	16.00	77.00	150.00
Wh. Wyandottes, Buff Orpingtons, Blk Minorcas,	9.25	18.00	87.00	170.00
Brahmas, Columbian Rocks, Col. Wyandottes,	11.25	22.00	105.00	200.00

Also Blue Andalusians, Partridge Rocks. Write for New Catalog. Order chicks NOW. 5% more chicks free if ordered 30 days before wanted. Our selected Breeders produce exceptional value chicks. Bank reference. 100% live arrival guaranteed. We hatch every chick we sell.

AMERICAN CHICKERIES BOX 214 GRAMPIAN, PA.

FOR YEARS WE HAVE HATCHED AND SOLD

SATISFACTORY CHICKS

100% LIVE DELIVERY GUARANTEED, POSTPAID

	25	50	100	500	1000
White, Brown and Buff Leghorns, Anconas	$4.00	$7.00	$13.00	$62.00	$120.00
Barred & Wh. Rocks, Reds, Black Minorcas	4.50	8.00	15.00	72.00	140.00
Extra Qual. White Leghorns & Barron Wh. Leghorns	4.75	8.50	16.00	76.00	150.00
White Wyandots, Buff Orpingtons, Buff Rocks	4.75	8.50	16.00	76.00	150.00
Extra Qual. Wh. Wyandots, Reds, Rocks, Wh. Minorcas	5.00	9.50	18.00	87.50	
Wyckoff and Tancred White Leghorns	5.00	9.50	18.00	87.50	

Heavy Mixed, 50, $7; 100, $13; 500, $62; 1000, $120. Light Mixed 50, $5.50; 100, $10; 500, $48; 1000, $95. Not Postpaid to Canada. Best personal attention to all orders.

Ref.—Farmer's State Bank, Dunn & Bradstreet. Free Catalog.

NEW WASHINGTON HATCHERY Box R NEW WASHINGTON, OHIO

WOLF SELECTED CHICKS

BABY CHICKS DIRECT TO YOU

THEY COST NO MORE AND YOU CAN FEEL SAFE our chicks are from leg-banded stock selected by expert trained and educated by Poultry Department, Ohio State University. You can feel safe for you know every chick is up to highest standard for egg production and breed type. Get our special wholesale price on brooder stove when bought with chicks.

SEND FOR OUR BIG CATALOG. It tells all about our pedigreed males and special pen matings. Also gives details about our high producing utility birds. Prices reasonable. Valuable book free with each order. Write today.

WOLF HATCHING & BREEDING CO. BOX 1, GIBSONBURG, OHIO

SCHWEGLER'S "THOR-O-BRED" BABY CHICKS "LIVE AND LAY"

They live because they are bred from healthy, free range breeders that have thrived and gained in vigor for generations. They lay because they are from selected and tested high egg power stock. White, Brown and Buff Leghorns, Barred and White Rocks, R. I. Reds, Anconas, Buff Orpingtons, White Wyandottes. 12c and up. 100% live delivery guaranteed. Postpaid. Member International Chick Assn. Write today for FREE Chick Book.

SCHWEGLER'S HATCHERY 204 Northampton BUFFALO, N.Y.

QUALITY BABY CHICKS $10 per 100 up, according to breed and age. Twelve varieties. Big, Active, Husky, Pure Bred chicks hatched from healthy free range breeders that live, grow and lay. Incubators hatching daily all year around with thousands of chicks on hand for immediate delivery. Postage prepaid. Live delivery guaranteed. Custom hatching. Send for price list or call at our hatchery. Inspection invited.

SCHOENBORN'S HATCHERY

Phone 7604 or 337. 335 Main St., Hackensack, N. J.

CHICKS REDS ROCKS LEGHORNS

Hatched as good as the best from pure bred culled flocks. Reds and Barred Rocks, $15.00 a 100; Tancred Strain White Leghorns, $13.00 a 100; Black Leghorns, $12.00 a 100; heavy mixed $11.00 a 100. Special price on larger lots. 100% live delivery guaranteed. Write for catalog or order direct.

BROOKFIELD POULTRY FARM MC CLURE, P A.

ERS.

Poultry Rations

(Continued from page 21)

pullet is three or four months old with the idea of holding her back.

Farmingdale Chick Ration

The New York State School of Applied Agriculture at Farmingdale, Long Island, the home of the New York State Egg Laying Contest, recommends the following mash mixture for chicks:

Dry Mash

100 lbs. wheat bran
300 lbs. corn meal
100 lbs. Red Dog flour
100 lbs. ground hulled oats
75 lbs. alfalfa leaf meal
25 lbs. mineral mixture
15 lbs. fine charcoal
50 lbs. high grade meat scrap
3 lbs. powdered sulphur
3 lbs. fine feeding salt

At Farmingdale they do not recommend any scratch grain for the first two weeks. Semi-solid buttermilk is fed from the first feeding until the birds begin to show signs of laying.

After the chicks are 5 weeks old, germinated oats are used, using 2 parts of oats to one of milk by weight. Cod liver oil is also added to the mixture.

After the first two weeks two grain feedings a day are given, one at noon and one in the late afternoon.

Feeding Cod Liver Oil and Other Chick Feeding Helps

The use of cod-liver oil as a preventive of leg weakness is recommended especially for early and indoor brooding, when chicks do not get an abundance of direct sunshine (not through glass). Mix 1 per cent of medicinal cod-liver oil in the mash (about 1 pint to 100 pounds of mash). Do not mix more than will be used in about a week.

Infertile eggs can be used to advantage. Mix them in the moist mash at the rate of 1 egg a day to from 40 to 50 chicks.

Do not overfeed. The chickens should always be waiting and ready when the next feeding time comes.

If the chicks fill up on dry mash, do not exercise, and are not hungry for the grain feeding, remove the mash a part of the time and reduce the amount of grain.

Feed moist mash sparingly.

Feed only good-grade, wholesome feeds.

Promote health by inducing the chicks to exercise and keep busy.

Provide fine grit and oyster shell from the start.

Keep the water fresh and clean.

Make all changes gradually. This is especially true of methods of feeding.

Give grass range or plenty of green food.

Get the chicks outdoors as soon as possible.

It is advisable to change from the growing to the laying mash a week or two before moving the birds to winter quarters.

Fall Management of Pullets

The pullets must have a reserve of fat when put into winter quarters. A good practice is to feed all the grain they will consume for a month before taking them from the range.

For those pullets that are still immature, due to late hatching, slow development, or unfavorable rearing, the growing rations will need to be continued. It might even be necessary to introduce some wet mashes to hasten their development. If the short days still find them unprepared for production, the days can well be lengthened by the use of artificial illumination.—Cornell Bulletin 45.

DUCKLINGS $35; Eggs $15-100 "Duck News" Free ROY PARDEE ISLIP, L. I. N. Y.

LARGE STOCK Fine Poultry, Turkeys, Geese, Ducks, Guineas, Bantams, Collies, Hares, Day Chicks. Eggs. low Catalog. PIONEER FARMS, TELFORD, PA.

SINGLE COMB

White Leghorns Exclusively

3000 breeders on free farm range. Pure Barron English Strain, with trapnest records up to 314 eggs in a year. The large Vigorous Leghorns that lay large white eggs. Now booking orders for hatching eggs and baby chicks Feb., Mar., Apr. & May delivery. Special feeding directions with all orders. Circular free.

Cecil Sherow and Olive Briggs Sherow successors to EDGAR BRIGGS, SUNNY BROOK FARM

Box 41 Pleasant Valley, N. Y.

200,000 Chicks 1927 ONE MATING ONLY.

THE BEST POPULAR BREEDS. LOWEST PRICES

	100	500	1000
S. C. White Leghorns Young and Barron Strains	$13.00	$62.50	$120.00
Barred Plymouth Rocks "Thompson Strain"	14.00	67.50	130.00
S. C. Rhode Island Reds "Owen's Strain"	15.00	75.00	
Broilers assorted	12.00	55.00	105.00

June 1 and later all chicks reduced 3c each. Order direct. Prepaid, 100% live delivery guaranteed. Circular free.

THE VALLEY HATCHERY, R. No. 1, Box 50, Richfield, Pa.

Choice Breeder's Chicks

S. C. WHITE LEGHORNS-Wyckoff Strain

At HATCHERY Prices

Ref. 1st National Bank of Princeton, Free circular. Charges prepaid.

BUNGALOW POULTRY FARM
C. H. Chandler, Prop.
Monmouth Junction, N. J.
Phone Plainsboro 628

	Per 100	Per 1000
March	$16	$150
April	15	140
May	14	130
June	12	110

Buy C-M-L-Chicks

BARRON S. C. WHITE LEGHORNS

headed by IMPORTED MALES. Pedigrees 285 to 314. Chicks 15c to 20c each. Barred & White Rocks, R. I. Reds, Wh. Wyandots, 16c each. Jersey BL Giants, 28c each. Discount on large orders. Catalog giving full description of all matings and prices free. Get it today. 100% Live Delivery Guar. Prepaid.

C. M. LONGENECKER, Box 40, ELIZABETHTOWN, PA.

BABY CHICKS

From Heavy Laying Free Range Flocks

	Per 100
S. C. White and Brown Leghorns	$12.00
S. C. Barred Rocks and Reds	14.00
Broilers or Mixed Chicks	10.00
S. C. W. L. Direct Wyckoff Strain	20.00

Special prices on 500 and 1000 lots.
100% *Prepaid Safe Delivery Guaranteed*

J. N. NACE POULTRY FARM

Richfield, Pa. - - - Box No. 161

THOUSANDS OF CHICKS WEEKLY BEST BY TEST

For delivery after March 1 book your order

S. C. Wh. or Br. Leghorns	$13.00 per 100
Barred Rocks	$15.00 per 100
R. I. Broilers	$10.00 per 100
R. R. Broilers	$12.00 per 100

Free and 100% Live Delivery Guaranteed

Can also furnish Anconas, Wh. Rocks, Reds, Wyandottes, Orpingtons, Minoreas, Bf. Leghorns. Write

H. C. Houseworth Poultry Farm & Hatchery

Port Trevorton, Pa.

CHIX Thompson strain Barred Rocks, Hollywood white leghorns; bred to lay, strong, active. Free range. March Rocks, $16.00 per 100. April, $15.00 per 100. Leghorns, March and April, $14.00 per 100. 100% *Guaranteed.*

COCKERELS Barred Rocks, Thompson strain, strong, active, from a good layer, $5.00 each.

SEIBERT BROS.

Elizabethtown - - - Pa.

Hamptons Black Leghorn Chicks

THE KIND THAT LAY

The famous Hampton Black Leghorn chicks will please and satisfy you and grow into the best layer of LARGE WHITE EGGS YOU EVER HAD. Now is the time to send your order in for choice of dates. Write today.

A. E. Hampton, Box A, Pittstown, N. J.

BETTER BABY CHICKS

$12 to $25 per 100

Barred and White Rocks, White and Columbian Wyandottes, Jersey Black Giants, Rhode Island Reds, Black Minorcas, Brown and White Leghorns, Mottled Anconas—20000 weekly. Finest purebred, heavy producing, free range stock, under Cornell University inspection. 100% Safe Delivery Guaranteed.

ULSTER POULTRY FARMS, Box 40, WALDEN, N. Y.

ONE MILLION BABY CHICKS

For 1927. Tancred & Barron Wh. Leghorns, Br. & Buff Leghorns, Anconas, Barred & Wh. Rocks, Reds, Buff Orpingtons, Wh. Wyandottes. Heavy & Light Assorted Chicks for Broilers. Flocks culled by authorized inspectors. 100% Live Delivery Guaranteed. Ref. Farmers & Citizens Bank, Bucyrus, Ohio. Free Catalog.

LYKENS POULTRY YARDS & HATCHERY, Dept. 4, Bloomville, Ohio.

JONES' BARRED ROCK AND SINGLE COMBED WHITE LEGHORN CHICKS

A Hatch every day. Prompt Shipment. Safe Arrival. Good Quality Guaranteed. Send for Price List.

A. C. JONES POULTRY FARM
Georgetown, Delaware

Where To Go For Help

ON this page are the names of organizations which have been created to serve you. When you need help on any farm production problem, any question resulting to the home, or any marketing situation or organization listed on this page.

1. Remember that at all times AMERICAN AGRICULTURIST maintains a large staff of experts and any questions referred to AMERICAN AGRICULTURIST will have prompt and cheerful attention entirely free of charge.

2. If your problem has to do with anything connected with the production end of your business, write your State College of Agriculture or take it up with your County Farm Bureau Agent.

3. If it is a home problem, write the Home Demonstration Agent in your county, or write the Home Economics college or Department in your state.

4. If it is a question relative to the enforcement of agricultural law, write your State Department of Agriculture or Farms and Markets.

5. If it relates to the education of your children, write your State Department of Education.

6. If you want information about any legislation, either state or national, or if you want to register your protest against any proposed legislation, write your state legislature or your representatives in Congress.

7. If you wish to buy any kind of improved implement or farm machinery, or breed of animal, or any variety of seed, or anything else, consult the advertising columns of AMERICAN AGRICULTURIST Our advertisments are guaranteed. If you do not find what you want listed among our advertisers, write AMERICAN AGRICULTURIST and we will help you if we can—and we usually can.

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House of Representatives, Washington, D. C.

1	Robert L. Bacon	23	Frank Oliver
2	John J. Kindred	24	B. L. Fairchild
3	Geo. W. Lindsay	25	J. M. Wainwright
4	T. H. Cullen	26	Hamilton Fish, Jr.
5	L. M. Black, Jr.	27	H. J. Pratt.
6	A. L. Somers	28	Parker Corning
7	J. F. Quayle	29	J. S. Parker
8	W. E. Cleary	30	Frank Crowther
9	D. J. O'Connell	31	B. H. Snell
10	Emanuel Celler	32	T. C. Sweet
11	A. S. Prall	33	F. M. Davenport
12	Samuel Dickstein	34	H. S. Tolley
13	C. D. Sullivan	35	W. W. Magee
14	N. D. Perlman	36	John Taber
15	J. J. Boylan	37	G. H. Stalker
16	J. J. O'Connor	38	Meyer Jacobstein
17	Ogden L. Mills	39	A. D. Sanders
18	F. F. Carew	40	S. W. Dempsey
19	Sol Bloom	41	C. MacGregor
20	F. H. LaGuardia	42	J. M. Mead
21	R. H. Weller	43	D. A. Reed
22	A. J. Griffin		

United States Senators From New York State

U. S. Senate, Washington, D. C.

Robert Wagner — Royal S. Copeland

New York State Senators

Senate Chamber, Albany, N. Y.

DISTRICT	SENATOR	DISTRICT	SENATOR
1	G. L. Thompson	27	C. H. Baumes
2	S. F. Burkard	28	J. G. Webb
3	A. J. Kennedy	29	A. H. Wicks
4	P. M. Kleinfeld	30	W. T. Byrne
5	D. F. Farrell	31	J. F. Williams
6	M. H. Evans	32	T. C. Brown
7	J. A. Hastings	33	H. E. H. Brereton
8	W. L. Love	34	W. T. Thayer
9	C. E. Russell	35	Jeremiah Keck
10	J. F. Twomey	36	H. D. Williams
11	D. J. Carroll	37	P. A. Pitcher
12	E. F. Quinn	38	G. R. Fearon
13	T. F. Burchill	39	J. W. Gates
14	B. Downing	40	B. R. Wales
15	J. L. Buckley	41	J. S. Truman
16	T. I. Sheridan	42	C. J. Hewitt
17	A. Greenberg	43	L. F. Wheatley
18	M. J. Kennedy	44	John Knight
19	D. T. O'Brien	45	J. L. Whitley
20	A. S. Feld	46	H. E. A. Dick
21	H. G. Schackno	47	W. W. Campbell
22	B. Antin	48	W. J. Hickey
23	J. J. Dunnigan	49	L. R. Lipowicz
24	T. J. Walsh	50	C. A. Freiberg
25	W. W. Westall	51	L. G. Kirkland
26	S. C. Mastick		

New York State Assemblymen Outside of Greater New York

Assembly Chamber, Albany, N. Y.

COUNTY.	DISTR.	NAME
Albany	1	William J. Snyder
	2	John P. Hayes
	3	Rudolph Roulier
Allegany		Cassius Congdon
Broome	1	Edmund B. Jenks
	2	Forman E. Whitcomb
Cattaraugus		James W. Watson
Cayuga		Sanford G. Lyon
Chautauqua	1	Adolf F. Johnson
	2	Joseph A. McGinnies
Chemung		G. Archie Turner
Chenango		Bert Lord
Clinton		Ezra Trepanier
Columbia		Henry M. James
Cortland		Irving F. Rice
Delaware		Ralph H. Loomis
Dutchess	1	Howard N. Allen
	2	John M. Hackett
Erie	1	Charles I. Martina
	2	Henry W. Hutt
	3	Frank X. Bernhardt
	4	John J. Meegan
	5	Ansley B. Borkowski
	6	Howard W. Dickey
	7	Edmund F. Cooke
	8	Nelson W. Cheney
Essex		Fred L. Porter
Franklin		John E. Redwood
Fulton-Hamilton		Eberly Hutchinson
Genesee		Charles P. Miller
Greene		Ellis W. Bentley
Herkimer		Theodore L. Rogers
Jefferson		Alfred E. Emerson
Lewis		Clarence L. Fisher
Livingston		A. Grant Stockweather
Madison		Harold O. Whitnall
Monroe	1	Arthur T. Pammenter
	2	Harry J. McKay
	3	Cosmo A. Cilano
	4	Frederick J. Slater
	5	W. Ray Austin
Montgomery		Rufus Richtmyer
Nassau	1	Edwin W. Wallace
	2	Leonard W. Hall
Niagara	1	William Bewley
	2	Frank S. Hall
Oneida	1	Martin J. Lutz
	2	Russell G. Dunmore
	3	George J. Skinner
Onondaga	1	Horace M. Stone
	2	Willis H. Sargent
	3	Richard B. Smith
Ontario		Ralph A. Catchpole
Orange	1	DeWitt C. Dominick
	2	Alexander G. Hall
Orleans		Frank H. Lattin
Oswego		Victor C. Lewis
Otsego		Frank M. Smith
Putnam		D. Mallory Stephens
Rensselaer	1	Michael F. Breen
	2	Maurice Whitney
Rockland		Walter S. Gedney
St. Lawrence	1	Rhoda Fox Graves
	2	Walter L. Pratt
Saratoga		Burton D. Esmond
Schenectady	1	Charles W. Merriam
	2	William M. Nicoll
Schoharie		Kenneth H. Fake
Schuyler		Jacob W. Winters
Seneca		William H. VanCleef
Steuben	1	Wilson Messer
	2	Webster Edmunds
Suffolk	1	John G. Downs
	2	John Boyle, Jr.
Sullivan		Guernsey T. Cross
Tioga		Daniel P. Witter
Tompkins		James R. Robinson
Ulster		Millard Davis
Warren		Powel J. Smith
Washington		H. A. Bartholomew
Wayne		Harry A. Tellier
Westchester	1	William C. Olsen
	2	Herbert B. Shonk
	3	Milan E. Goodrich
	4	Alex'der H. Garnjost
	5	Arthur I. Miller
Wyoming		Joseph R. Hanley
Yates		Edwin C. Nutt

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NEW YORK

COUNTY	AGENT	ADDRESS
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Cayuga	C. L. Messer, Jr., C. H.,	Auburn
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Chenango	K. D. Scott,	Norwich
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Cortland	H. L. Vaughn,	Cortland
Delaware	C. G. Bradt,	Walton
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Essex	R. J. Clark,	Westport
Franklin	C. W. Radway,	Malone
Fulton	C. H. Fullager,	Gloversville
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Greene	E. G. Brougham,	Catskill
Herkimer	B. D. Gilbert,	Herkimer
Jefferson	O. G. Ange,	Watertown
Lewis	J. C. Otis,	Lowville
Livingston	W. C. Stokoe, Mt.	Morris
Madison	D. L. Hays,	Wampsville
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Montgomery	C. M. Austin,	Fonda
Nassau	H. C. Odell,	Mineola
Niagara	L. A. Muckle,	Lockport
Oneida	G. W. Bush, C. H.,	Utica
Onondaga	D. D. Ward, C. H.,	Syracuse
Ontario	R. W. Pease,	Canandaigua
Orange	C. C. Davis,	Middletown
Orleans	R. G. Palmer,	Albion
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*C. H. stands for Court House.

NEW JERSEY

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Warren	Howard Mason, C. H.,	Belvidere

*C. H. stands for Court House.

State Colleges of Agriculture and Home Economics

STATE	LOCATION
New York	Ithaca
Pennsylvania	State College
New Jersey	New Brunswick

Departments of Agriculture and Markets

STATE	LOCATION
New York	Dept. of Agriculture and Markets, Albany
Pennsylvania	Dept. of Agriculture, Harrisburg
New Jersey	Dept. of Agriculture, Trenton

Qualifications of Voters

(*Continued from page 3*)

of the four following special qualifications is entitled to vote.

1 Owns, leases, hires, or is in the possession under a contract of purchase of, real property in such district liable to taxation for school purposes; but the occupation of real property by a person as lodger or boarder shall not entitle such person to vote. (Under the first clause person who hold a joint deed or joint lease may each vote. The clause was added by Laws of 1924, chapter 452.)

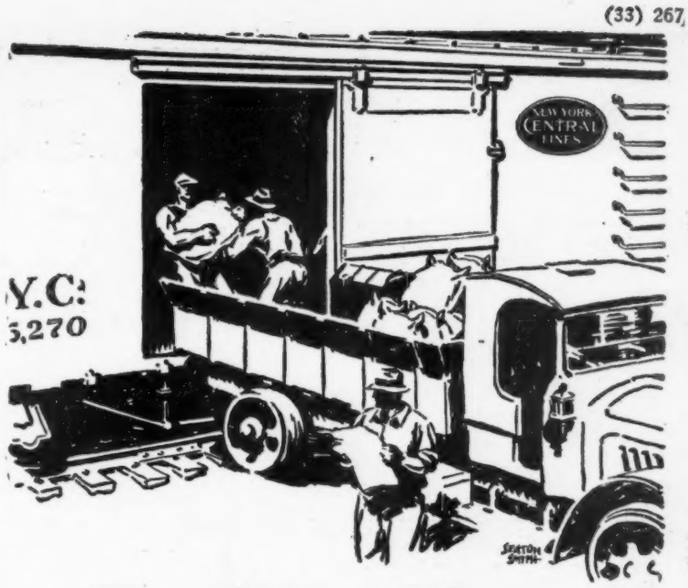
2 Is the parent of a child or children of school age, provided such child or children shall have attended the district school in the district in which the meeting is held for a period of at least eight weeks during the year preceding such school meeting. (Under this provision both father and mother may vote.)

3 Not being the parent, has permanently residing with him or her a child or children of school age who shall have attended the district school for a period of at least eight weeks during the year preceding such meeting. (Under this provision but *one* person may vote, namely, the head of the household.

4 Owns any personal property assessed on the last preceding assessment roll of the town exceeding $50 in value, exclusive of such as is exempt from execution. (*See* Education Law, Section 203.)

Qualified voters may vote on *any* question brought before any annual or special school meeting; *it is not essential that a person be a taxpayer to vote on propositions for raising money by tax on the district.*

Women possessing any of the above qualifications are entitled to vote.



Feeding Plants

CONTINUOUS crop production on most of the farm lands in the central and eastern parts of the United States has reduced the available supply of fertility for the best growth of crops.

In order to produce farm crops at less cost per bushel or ton, it pays to apply certain kinds of plant food in the form of prepared fertilizers. The kind of fertilizer and the amount to be used will depend upon the previous treatment of the soil, the crops produced in the past, and the crops to be grown.

Apply to your county agricultural agent, to your agricultural college, or to this Department for information regarding the best fertilizer to apply.

NEW YORK CENTRAL LINES

New York Central Lines

Boston & Albany—Michigan Central—Big Four—Pittsburgh & Lake Erie and the New York Central and Subsidiary Lines

Agricultural Relations Department Offices

New York Central Station, Rochester, N. Y.

La Salle St. Station, Chicago, Ill. — **Michigan Central Station, Detroit, Mich.**

466 Lexington Ave., New York, N. Y. — **68 East Gay St., Columbus, Ohio**

What the Farm Woman Wants to Know

How to Feed Young Children.

HERE is a diet worked out by specialists for children from nine months to sixteen years old. If it is good for a sixteen-year-old,: then it certainly would be just as good for a thirty- or a forty-year-old. Best of all, it has the right amount of milk which the growing body needs.

Food for a Child 9 to 18 Months Old

6 *a. m.*: Milk.
8 *a. m.*: Orange juice
10 *a. m.*: Bottle of warm milk that has been boiled and cooled. One or two tablespoons of thoroughly cooked strained cereal with milk.
2 *p. m.*: Thin piece of crisp toast or twice baked bread, soft cooked egg yolk with bread crumbs, strained spinach or carrots, bottle of milk.

Mid-afternoon lunch: Two or three tablespoons of orange juice or other mild fruit juice.
6 *p. m.*: Cup of milk. One or two tablespoons of thoroughly cooked strained cereal with milk. A few drops of cod-liver oil may be added to each cup of warm milk.

Type of Meals for Children 18 Months to 2 Years Old

6 *a. m.*: Boiled and cooled milk.
8 *a. m.*: Orange juice or prune or apple pulp.
10 *a. m.*: Six to eight ounces of boiled and cooled milk; thin slices of hard toast; well-cooked, strained cereal or cereal jelly.
2 *p. m.*: Soft cooked egg; small serving of any mild vegetable, rubbed through a strainer; thoroughly mashed baked potato with milk added; thin slice of lightly buttered stale bread or crisp toast; four to six ounces of milk; simple dessert, such as custard or junket.
Mid-afternoon Lunch: Strained juice of an orange, or strained prune or apple pulp.
Supper: Boiled and cooled milk to drink; well-cooked cereal with top milk; thin slice of very lightly buttered stale or twice baked bread. A few drops of cod-liver oil may be added to each cup of warm milk.

Type of Meals for Children 2 to 4

Breakfast: Orange or fruit pulp (stewed fruit for those nearing fourth year); well cooked cereal with whole milk; thin slices of stale bread or crisp toast; milk.
Mid-morning Lunch: Bread and milk or fruit and milk, or graham crackers and fruit.
Dinner: Cream vegetable soup; soft-cooked egg; baked or mashed potato; finely chopped spinach or some other succulent vegetable; milk to drink, unless sufficient milk is supplied with soup; custard (unless egg is given), junket or stewed mild fruit.
Mid-afternoon Lunch: Small bowl of bread and milk or cooked fruit and milk.
Supper: Milk toast or cereal with milk; milk to drink; very simple dessert, such as junket or stewed fruit.

Type of Meals for Children 4 to 8

Breakfast: Orange; well-cooked or ready-to-eat cereal with top milk; toast and butter; milk.
Dinner: Egg or a small piece of meat; potato; vegetable other than potato, with a leafy vegetable used frequently; whole wheat bread; a simple dessert; milk.
Mid-afternoon Lunch: Whole-wheat bread and milk, or mild cooked fruit and milk.
Supper: Milk toast or cereal and milk or a cream soup; milk to drink, unless sufficient milk is supplied with toast or soup; stewed fruit; molasses cookies.

Type of Meals for Children 8 to 12

Breakfast: Fruit, stewed or fresh (oranges as often as possible); well cooked cereal or ready-prepared cereal with top milk; toast and butter, milk; egg.
Luncheon or Supper: Cream soup or a scalloped vegetable; toast, or bread and butter; milk; a simple dessert.
Mid-afternoon Lunch: (If the child is underweight or is really hungry), fruit and milk, or bread and milk.
Dinner: Meat, broiled or baked; or fish, broiled or baked; or a meat substitute; vegetable other than potato, with a leafy vegetable used frequently; whole wheat bread and butter; simple dessert.

Meals for Children 12 to 16 Years

Breakfast: Stewed or fresh fruit (oranges as often as possible); well cooked cereal or ready-prepared cereal with top milk; toast with butter; milk or cocoa; eggs.
Luncheon or Supper: A scalloped vegetable with or without cheese, or a vegetable cream soup; whole wheat bread and butter; milk or cocoa; fruit, raw or cooked.
Dinner: Meat or meat substitute; potatoes; vegetable, other than potato, with a leafy vegetable used frequently; whole wheat bread and butter; milk; a simple dessert.

—Marv Henry and Lucile Brewer in Cornell Bulletin No. 105.

Eliminate Guesswork in Baking.

In mixing breads, cakes, cookies or any food made from doughs and batters, the housekeeper should know what certain proportions of liquids, flour and leavening agents, will produce. When a new recipe is tried out, she can judge beforehand to a certain extent as to the kind of mixture it will make if she is familiar with proportions. The "by-guess-and-by-golly" method of measuring is not safe and we are giving below some tables worked out by the U. S. Bureau of Home Economics which will act as a guide.

Soft wheat flour is best for cakes and pastries but if you do not have the pastry flour, follow these rules for altering the recipes:

Flour

How to substitute various types of wheat flours in quick breads, cakes, cookies and pastry. The quantities of flour recommended in Table 2 are for the soft wheat, or pastry, type. Hard-wheat flour may be substituted on the basis of seven-eighths cup for each cup of soft-wheat flour, for these quantities weigh practically the same, since the hard-wheat flour is more compact. On the same basis of weight three-fourths cup of coarse graham or seven-eighths cup of more finely ground graham flour, measured before sifting may be used in place of 1 cup of sifted pastry flour.

Cooling Drinks Quickly Made

If a few lemons and oranges are kept on hand—and they have been found to contain very important vitamins—most farm women can quickly prepare very refreshing drinks from materials usually

TIME TABLE FOR CANNING FRUITS, TOMATOES AND PICKLED BEETS

The time and methods given here have been worked out by the Bureau of Home Economics for certain foods which are considered to be safely canned by the water-bath method. Time quoted in minutes at right of column is for pint or quart jars. For one-half gallon jars add 5 minutes to the time quoted for pints or quarts.

Product	Method of Treatment before Processing	Pint & Quart Glass Jars.
Apples.	Slice, quarter, or halve, then pack in containers and cover with boiling sirup.	15
	Or boil whole in sirup, or bake as for serving, and cover with sirup, and pack hot.	5
	Or pack hot in form of apple sauce.	5
Apricots...	Same as peaches.	
Blackberries Blueberries Dewberries Huckleberries Raspberries.	Pack in containers. Fill with boiling hot, medium sirup.	20
	Or precook and pack hot.	5
Cherries...	Pack in containers, cover with boiling sirups, using thick sirup for sour cherries, and medium for sweet.	25
	Or remove pits, add sugar as desired, bring to boil, and pack.	5
Currants.	Same as berries.	
Gooseberries	Pack in containers. Fill with boiling hot, thick sirup.	20
	Or prepare sauce, using sugar as desired. Fill hot.	5
Peaches	Scald, dip into cold water and peel. Cut into size desired, removing pits. Fill containers, then add sirup of desired consistency, in which one cracked peach pit for every quart of sirup has been boiled.	25
Pears..	Pare and cook for 4 to 8 minutes in boiling medium sirup. Pack hot in containers and fill with the boiling sirup.	20
Pineapples.	Peel, core, remove eyes. Cut into convenient cross sections. Pack in containers. Fill with boiling thin sirup.	30
Plums.	Prick. Fill in containers. Cover with boiling medium sirup.	20
	Or bring to boil, using sugar as desired. Fill hot into containers.	5
Rhubarb	Cut in half-inch lengths. Add one-fourth as much sugar as rhubarb by measure. Bake until tender in covered baking dish. Pack in hot containers.	5
	Or pack uncooked with boiling sirup.	20
Strawberries	To each quart add 1 cup of sugar and 2 tablespoons of water. Boil slowly for 15 minutes. Let stand overnight in the kettle. Reheat to boiling. Fill containers hot.	5
Tomatoes..	Scald and peel. Pack whole or cut in pieces. Cover with hot tomato juice. Add 1 teaspoon salt to each quart.	45
Pickled beets.	Precook, peel, and slice in containers. Cover with mixture of vinegar and sugar, boiling hot.	30

(U. S. D. A. Farmers' Bulletin 181)

TIME TABLE FOR CANNING NON-ACID VEGETABLES WITH THE PRESSURE CANNER

Pack vegetables boiling hot into jars, add 1 teaspoon salt per quart of vegetables and 2 teaspoons sugar, if desired, to corn. Place jars or cans in hot canner as soon as they are filled. The Bureau recommends the pressure canner for non-acid vegetables because of spoilage difficulties and the risk of poisoning from occasional contamination with botulinus bacteria when the water-bath method is used for these vegetables. Time quoted is for quart jars. For pint jars subtract five minutes from the processing period.

The pressure is the same for pints as for quarts.

Product	Method of Treatment before Processing	Quart Glass Jars.
Asparagus...	Tie in uniform bunbles, place in saucepan with boiling water over lower tough portion, cover tightly, boil 4 to 5 minutes, and pack hot into containers.	40 min. 10 lbs. 240° F.
	Or cut in half-inch lengths, bring to boil in water to cover, and pack into hot containers.	
Beans, string.	Heat to boiling with water to cover. Pack hot into containers.	40 min. 10 lbs. 240° F.
Beans, Lima.	Can only young and tender beans, using method suggested for peas.	60 min. 10 lbs. 240° F.
Baby beets.	Can only young tender beets. Scald in boiling water or steam until the skins slip easily. Skin and pack hot into containers.	40 min. 10 lbs. 240° F.
Corn...	Cut off without precooking. Add half as much boiling water as corn by weight, heat to boiling, and pack hot into containers.	80 min. 15 lbs. 250° F.
Greens, including spinach	Steam or heat in covered vessel until completely wilted, using just enough water to prevent burning. Pack hot into containers, taking care that the material is not packed too solidly and that there is liquid to cover.	90 min. 10 lbs. 240° F
Okra...	Can only young, tender pods. Cover with water and bring to boil. Pack hot into containers.	40 min. 10 lbs. 240° F.
Peas, green..	Use only tender young peas. Bring to boil with water to cover and pack hot into containers.	50 min. 10 lbs. 240° F.
Peas, blackeyed..	Same as Lima beans.	
Sweet potatoes....	Boil or steam until skins slip off readily. Peel quickly and pack into hot containers.	60 to 70 min. 10 lbs. 240° F.

—U. S. Bureau of Home Economics.

Table 2—*Proportions for quick breads, cakes, cookies and pastry*

	Liquid (usually milk)	Flour (sifted soft wheat)	Fat*	Eggs	Baking powder	Sugar	Salt	Flavoring
Popovers	1 cup	1 cup	1 to 2 teaspoons	1 to 1½			1-3 teaspoon	
Waffles	1 cup	1 1-3 cups	2 tablespoons	1 to 2	2 teaspoons	1 tablespoon	½ teaspoon	
Griddle cakes	1 cup	1½ cups	1 to 2 tablespoons	1	2 teaspoons	0 to 1 tablespoon	½ teaspoon	
Fritter batter:								
No. 1 cover	1 cup	1¼ cups	1 teaspoon	1	1 teaspoon		1-3 teaspoon	
No. 2 binding	1 cup	1¾ cups	1 tablespoon	1	2 teaspoons		½ teaspoon	
Muffins .	1 cup	2 cups	2 to 4 tablespoons	1	2 teaspoons	1 to 2 tablespoons	½ teaspoon	
Cottage pudding	1 cup	2 1-3 cups	¼ to 1-3 cup	1	3 teaspoons	2-3 cup	¼ teaspoon	½ teaspoon P. c.
Foundation cake	1 cup	3 cups	½ cup	2 to 3	4 teaspoons	1½ cups	¼ teaspoon	
Baking-powder biscuit	1 cup	3 cups	4 to 6 tablespoons		4 teaspoons		1 teaspoon	
Pastry	about 2½ tablespoons water	1½ cups	5½ to 7 tablespoons				1 teaspoon	

Proportions for three types of butter cakes

Ingredients	Plain cake	Foundation cake	Rich cake
Milk	1½ cups	1 cup	1 cup
Flour (soft wheat)	3 cups	3 cups	3 cups
Fat*	1-3 cup	½ cup	1 cup
Eggs	1	2 to 3	4
Baking powder	5 teaspoons	4 teaspoons	4 teaspoons
Sugar	1¼ cups	1½ cups	2 cups
Salt	¼ teaspoon	¼ teaspoon	¼ teaspoon
Flavoring	½ teaspoon	½ teaspoon	½ teaspoon

*These proportions are for fat containing no water. If butter or other fat containing water is used, about 3 tablespoons more for each cup of fat should be allowed.

Proportions for sponge cakes

Ingredients	Sponge cake	Sunshine cake	Angel food
Flour (soft wheat)	1 cup	1 cup	1 cup
Eggs	1 cup (4 or 5 eggs)	1 cup (8 whites and 3 yolks)	1 cup whites (8 fairly large)
Sugar	1 cup	1 to 1¼ cups	1 to 1½ cups
Salt	½ teaspoon	½ teaspoon	½ tea spoon
Flavoring and acid	3 teaspoons lemon juice ½ lemon rind grated	1 teaspoon flavoring 1 teaspoon cream of tartar	1 teaspoon flavoring 1 teaspoon cream of tartar

to be found on the cellar shelves or in the cupboard.

MILK SHAKE—to each 1½ cups milk allow one beaten egg, sugar to taste (about 1 teaspoon) and a dash of nutmeg. Shake thoroughly in a fruit jar. If chocolate flavor is desired, omit sugar, and use 1½ tablespoons of chocolate syrup instead.

RED FRUIT PUNCH—Use juice from canned red cherries or from strawberries. Add enough lemon juice for tartness and enough of the cherries or berries so that each glass has two or three pieces of fruit. A small amount of pineapple juice blends well with this combination. Do not have it too sweet.

CURRANT JELLY PUNCH—Gradually pour 2 cups boiling water over 1 cup currant jelly beaten to a froth. Add ½ cup sugar and 3 tablespoons lemon juice and chill thoroughly. If charged water is available add one quart of it just before serving. If not available use plain water instead. Try this with grape jelly if your supply of grape juice is gone.

TEA PUNCH—1 cup tea, 1 cup grape juice, 1 quart water, ½ cup lemon juice, ½ cup orange juice, 1 cup sugar, 1 cup shredded pineapple. Mix, let stand 3 or 4 hours and chill.

Suggestions for Curtains

For Glass Curtains: Bastiste, Canton linen, China silk, cheesecloth, chiffon, cross-barred muslin, dish toweling, dotted swiss, eyelet embroidery, fish net, georgette, grenadine, handkerchief linen, lawn, marquisette, madras, maline, mull, net, organdie, pineapple cloth, rayon and cotton gauzes, scrim, tarlantan, theatrical gauze and voile.

For Glass Curtains Arranged to Draw: Casement cloth, gingham, gauze (heavy), habutai silk, Japanese crepe, pongee, soisette, silk and cotton mixtures, Shantung, taffeta.

For Draperies: Arras, armure, burlap, brocade, casement cloth, challie, chambray, chintz, corduroy, cotton flannel, cretonne, damasks (silk and cotton), denim, English print, gingham, glazed chintz, homespun, Japanese crepe, mohair casement cloth, mohair velvets, Monk's cloth, oilcloth, poplin, printed linen, silk or cotton, rayon novelty fabric, rep, Russian crash, sateen, satin, Shantung, silk, toile de jouy, terry cloth, tapestry, taffeta and velours.

—*Bureau of Home Economics.*

How to Remove Stains

To remove all unknown stains, grass and mildew, wash the stain in cold water.

To remove chocolate with cream, cocoa with cream, cream gravies, cream, scorch, sewing machine grease and tea with cream, wash with cold water and soap; any trace of stain may be removed with warm water and soap.

To remove blood and mucus, mucus, mucus and pus, soak in cold water to which salt has been added, 1 cup of salt to 8 quarts of water, then wash in warm water and soap.

To remove blood, punch, sugars, and syrups, wash in warm water until the stain disappears.

To remove grease, meat juice and perspiration, wash in warm water and soap, or use magnesium, chalk, starch or meals—not flours.

To remove indelible pencil, stove blacking, tan shoe polish, tar, and wagon grease, put lard on stain, rub well into the grease spot; wash with soap and warm water. Repeat until removed.

To remove bluing, clear coffee, clear tea, and fruit, spread stain over bowl; pour boiling water through the stain from a height.

To remove old stains of chocolate, cocoa, coffee, and tea, moisten with cold water; cover with borax, and let stand a few minutes; rinse with boiling water.

To remove ink and iron rust, use dilute acids (lemon juice, sour milk, cream of tartar, rhubarb, pineapple, hydrochloric and oxalic acids. Use food acids direct without dilution; dilute hydrochloric and oxalic acid, with equal quantities of water). Apply the acid, let stand a few seconds, rinse with warm water; continue until stain disappears, then wash with soap and water.

To remove ink and stubborn stains, use dilute acids (see paragraph above) and Javelle water. Apply the acid, then follow with Javelle, finally rinse with hot water and soap.

To remove old stains and stubborn stains, use dilute oxalic acid (as above) and potassium permanganate. Apply a few drops of potassium permanganate, rinse with warm water, then apply oxalic acid. Repeat until stain disappears and finally wash with soap and water.

Before beginning to work on the stain, find out if possible: What kind of fabric is stained, and what is the stain. If the fabric is colored one must decide which is least objectionable, the stain, or the resulting color or lack of color which may come from the action of the chemical used to remove the stain. Try the stain remover on a sample of fabric or on some underseam to see the effect.

In using chemicals one should know that alkalies, like soda, potash, ammonia, and strong soaps, yellow and destroy wools and silks. Dilute acids, such as half-strength oxalic, citric, and hydrochloric, may be used on wools and silks.

Dilute acids and alkalies may be used on cottons and linens.

Cold water will remove many stains and is, therefore, the first thing to try, especially if the stain is unknown. The worker must realize that it takes time, and that several short applications are better than one continuous one. If any reagent has been used, except chloroform or gasoline, which always quickly evaporates, wash out with soap and water or a very abundant use of water. This will stop further work of the chemical and possible formation of holes.—*L. Ray Balderston's Housewifery.*

Equipment for Home Laundry

Washing: Washtubs, washboards, washing machine, wringer, boiler and clothes stock, soap dish.

Starching: Saucepan, or double boiler of enamel ware or aluminum, strainer, large pan, or pail of enameled ware or aluminum, measuring cup and spoons.

Drying and Sprinkling: Clothesline, clothespins, clothes props, curtain stretchers, sprinkler.

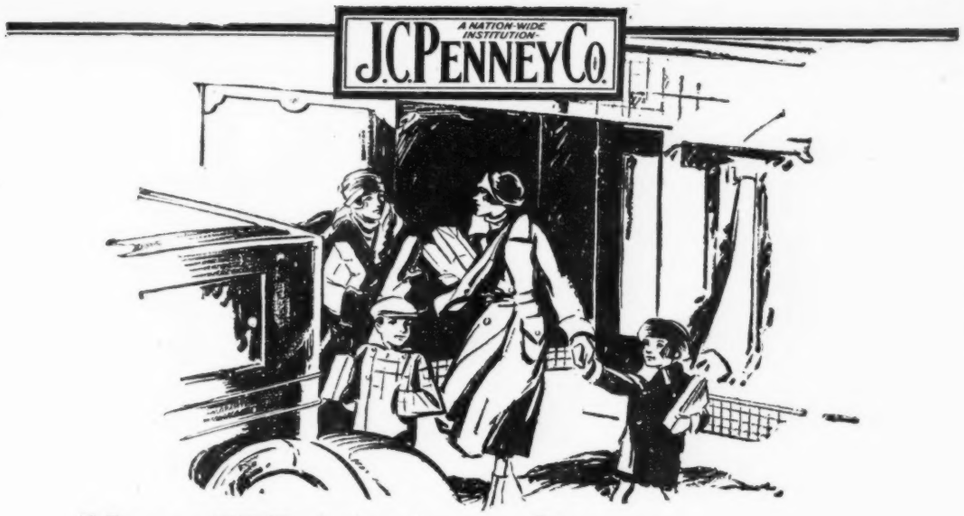
Ironing: Irons, iron rest, ironing-board, ironing table, ironing machine, sleeve board, clothes rack.

Miscellaneous: Clothes basket, pail or bucket, galvanized iron, dipper, scrubbing brush.

Supplies for Home Laundry

(Including bleaching agents, some stain removers and common necessities).

Alcohol (denatured), alum, ammonia, beeswax, blue, borax, chloride of lime, hydrochloric acid, Javelle water, lime water, paraffin or white candle ends, potassium permanganate, oxalic acid, sal soda, salt, soap, starch, tea and turpentine. Chloroform, ether and such chemicals purchased as needed for special recipes.



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Clothing the Family

The Baby's Clothes

The following list includes all the garments that it is necessary for any young infant to have for the first few weeks of life; later, if a more elaborate outfit is desired, other garments may be added:

Three abdominal bands, 6 to 8 inches wide and 20 inches long, soft flannel strips, unhemmed.

Three shirts, size 2, wool and cotton or wool and silk, not all wool.

Four flannel skirts, "Gertrude" style.

Three nightgowns or wrappers of outing flannel, buttoned in front.

Eight white slips.

Three knit bands, with shoulder straps, part wool.

At least four dozen diapers.

Cloak.

Cap.

Carriage blanket of crocheted or knitted wool.

Three pairs of socks, if in summer; three pairs of long white merino stockings, if the weather is cold.

Nursery Equipment

The essential articles for the baby's nursery are a comfortable bed and the things that will be needed in his toilet. The following list will be found to include the essential items:

An old soft blanket.
Four dozen safety pins of different sizes.
Some old soft towels.
Soft wash cloths.
Hot water bag, with flannel cover.
Talcum powder.
Castile soap.
Olive oil.
Two ounces of boric acid.

A crib. If desired, a clothes basket makes a good bed. A basket or box that may readily be moved about is a great convenience. The mattress for any sort of bed may be made from table felting, which, when folded a few times, makes a very soft, smooth bed and has the great advantage over the ordinary mattress that it may be washed and boiled and dried in the sun.

Additional Conveniences

Below is a list of additional articles that will be found convenient in the care of the baby:

Bathtub, tin, galvanized-iron ware or rubber.
Drying frames for shirts and stockings.
Bath apron of turkish toweling or outing flannel.
A low chair, without arms.
Baby scales.
A low screen, to protect the baby while it is being bathed.
A low table on which to bathe and dress the baby.

—*U. S. Children's Bureau Pub. No. 4.*

To Freshen Old Hats

Frequent brushing adds to the appearance and life of a hat.

If a black straw becomes dusty and gray, brush it thoroughly then rub with a piece of flannel which has been slightly oiled with vaseline. After it has been cleaned in this way give it a coat of white shellac and the straw will look like new. If the hat is out of shape it can be dampened and pressed with a warm iron before the shellac is applied.

Colored straws or white ones which have become dark may be made like new by coloring with an oil paint thinned to the right shade and consistency with gasoline. This must be applied as quickly as possible after mixing since the gasoline evaporates so quickly.

A velour hat which has become spotted with rain and dust, can be renovated by holding over steam and brushing with a good bristle hat brush.

Velvet can be renovated in the same way as the velour. The best way to steam velvet in the piece is to put a wet cloth over a hot iron and draw the back of the velvet across the steaming cloth until well steamed, then remove the cloth and dry the velvet by drawing the back over the hot iron.

Flowers can be steam and straightened, then touched up with water color paint or oil paint and gasoline and made to do service for hat trimming a second season.

Ribbon is sometimes worth using a second time but sponging and pressing are likely to take the stiffness out and leave it soft so that it can only be used for draping or making soft rosettes.

—*Pennsylvania State College Bull. 78*

When You "Dye"

White or light shades will take almost any color. Dark colors cannot be dyed a lighter shade nor can certain colors be changed into other colors without bleaching or "stripping" the original color.

Best results are obtained by dyeing a darker shade of the same color. Follow carefully instructions given on package, especially as to quantities. Careful rinsing helps to leave a clear color. Black is the most difficult color to obtain. Checked or figured material is almost impossible to cover evenly with any dye.

Things to remember when combining colors:

Almost any known shade may be obtained by combinations of the primary colors, yellow, red, blue.

Red plus blue equals violet.
Red plus yellow equals orange.
Yellow plus blue equals green.
Red plus blue plus yellow equals gray.

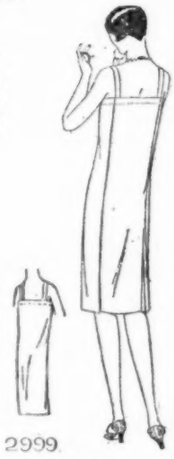
When dyeing over other colors:

Red over yellow produces scarlet.
Red over blue produces purple.
Red over brown produces reddish brown.
Red over orange produces light red.
Red over purple produces reddish purple.
Blue over red produces purple.
Blue over yellow produces green.
Blue over brown produces dull blue.
Blue over purple produces bluish purple.
Blue over green produces bottle green.
Yellow over red produces scarlet.
Yellow over blue produces green.
Yellow over brown produces golden brown.
Yellow over purple produces greenish brown.
Yellow over green produces light green.
Yellow over orange produces yellow orange.
Brown over purple produces chocolate.
Brown over orange produces yellowish shade of dark brown.
Brown over green produces dull greenish brown.
Orange over purple produces light reddish brown.
Orange over brown produces tobacco brown.
Orange over green produces yellowish green.
Green over orange produces myrtle green.
Green over purple produces dull dark green.
Green over brown produces olive green.
Purple over green produces dull dark purple.
Purple over brown produces very dark red brown.
Purple over orange produces light dull purple.
Pink over light blue produces lavender.
Pink over light yellow produces shell pink.
Pink over light orange produces coral pink.

Never attempt to dye pongee or wild silk a jet black, as this is an impossibility. The best color that can be obtained on this kind of material is a blue-black.

Patterns for the Family Wardrobe

Boy's combination suit **pattern 2766** *comes at just the right time for the home dressmaker to lay in a supply of summer underclothing for the little folks. It cuts in sizes 2, 4, 6, 8, 10 and 12 years. The 4-year size requires 1¼ yards of 36-inch material.* **Price 13c.**



Women's and girl's slip **pattern 2999** *is ideal for the new slender frocks. Inverted plaits at the back below the waistline provide walking room. The slip cuts in sizes 16, 18 years, 36, 38, 40, and 42 inches bust measure. The 36-inch size requires 2½ yards of 40-inch material.* **Price 13c.**

Dress **pattern 2970** *has the smart features which are being shown in spring models of silk, the bloused waist and plaited front. The neck at the back has tucks giving it a very becoming touch. The pattern cuts in sizes 16, 18 years, 36, 38, 40, 42, 44 and 46 inches bust measure. The 36-inch size requires 3¼ yards of 40-inch material.* **Price 13c.**

Coat dress **pattern 2996** *gives the atmosphere of smart simplicity so necessary to the all-purpose frock. The becoming vestee of contrasting material is being widely used just now. The pattern cuts in sizes 16, 18 years, 36, 38, 40, 42, 44 and 46 inches bust measure. The 36-inch size requires 3½ yards of 40-inch material with ¼ yards of 18-inch contrasting.* **Price 13c.**

TO ORDER: Write name, address, pattern numbers and sizes clearly and correctly and enclose the correct remittance in stamps or coin (although coin is sent at own risk.) Add 12c for one of our new Spring Fashion books and address Pattern Department, American Agriculturist, 461-4th Avenue, New York City.

A Household Repair Kit

A well-stocked repair kit should be a part of the equipment of every household. It should be placed in a convenient location and should contain: hammer, screw driver, plane, pliers, awl, oil can, soldering outfit, knife sharpener, twine, shears, and such tacks, nails, screws, hooks, and wire as are most often in demand.

Health and Beauty Hints

Care of the Skin

Wash daily with neutral milk soap which does not cause the skin to smart. If the atmosphere is sooty, take especial pains to get the soap rubbed into the pores of the skin. A soft brush may be useful for this purpose.

Rinse with warm water, then with cold water to close the pores. A brisk rub with a piece of ice placed in a soft cloth will tone up muscles of face and neck and will reduce enlarged pores.

Apply a good face cream once a day, especially in winter. For a skin which tends to oiliness use a greaseless cream. A good lotion for oily skin is boric acid and glycerine in equal parts, with a few drops of camphor.

For pimples look first to the diet to see that an abundance of fresh vegetables and fruits are used and avoid the fatty foods or excessive use of meats or candy. See that the bowels are kept open and that the body gets plenty of exercise and fresh air. Then apply the rule of absolute cleanliness to the skin, scrubbing gently with a cloth or soft brush. Boil or disinfect the cloth or brush after each use to prevent re-infection. If pimples must be opened, do so with a needle sterilized by passing through a flame. Press out gently the contents of the pimple and apply boracic acid two or three times a day to the eruption. Boils or carbuncles should have a doctor's attention.

Care of Nails

The nails are also growths of the skin and are affected by general health, though not to so great an extent as the hair. Well-kept nails indicate good personal care, and are essential to a good appearance. The nails, even of a person who does hard manual work may be kept in good condition by regular attention.

The cuticle around the nails should be pressed down daily so that the little white half-moon at the base will show and hangnails thus be prevented. A soft orange stick or a toothpick may be used for this purpose. The nails should be trimmed in a curve, following the shape of the ends of the fingers and a little longer than the fingers. If they have a tendency to break, pure white vaseline rubbed on them once a day will make them less brittle.

The nails should be kept clean by removing the dirt with a soft, pointed stick and scrubbing with a nail brush. A little white powder or paste placed under the nail after cleaning tends to keep it clean and gives a good appearance. This powder may be talcum, or prepared chalk, or a paste especially prepared for this purpose. Small emery boards are inexpensive and may be used on the sides of the nails to remove rough edges.

Care of the Hands

The hands are touching objects of all kinds almost constantly. An analysis of the deposit on the hands and nails shows many dangerous kinds of germs, especially those causing boils and infections. In order to prevent transfer of disease germs through the hands, the following precautions should be taken:

Wash the hands thoroughly before handling food or drink and after going to the toilet.

Keep the hands and fingers away from the nose, mouth and face.

Do not bite the nails.

Do not break the skin by scratching it with the nails.

Prevent redness and roughness by the same careful skin treatment used for the face.

Do not waste energy by useless, aimless movements of the hands or fingers. Body poise is shown in controlling the hands.

Care of the Feet

Proper care includes correctly fitted shoes, which support the foot without confining it in any way; well-fitting stockings, which are longer than the foot but which fit without wrinkles; a daily bath, followed by massage, so that the blood capillaries of the toes may move freely and good circulation be maintained in the legs; careful attention to the toenails, which should be trimmed round, a little longer than the end of the toe, and kept clean by means of a stiff brush and a soft, orangewood stick. A good astringent powder used between the toes and a clean pair of stockings each day will contribute a great deal toward foot comfort.

Characteristics of a good shoe:

1. The inner line from heel to toe should be nearly straight. Some feet curve outward and some inward, but most natural feet show this straight inner line from toe to heel.

2. The front part of the shoe should be as wide as the foot it is to fit, and the shoe should be ¾ inch longer than the foot.

3. The heel should not be over 1½ inches in height, and as broad at the bottom as the human heel itself.

4. The arch of the shoe should be as high as the arch of the foot, and should be flexible. Very low heels sometimes cause a strain over the arch of the foot, in which case they should be avoided by adults.

5. The shoe should fit closely around the arch and the instep and loosely over the toes.—*Ellen A. Reynolds Health and Personal Appearance, Cornell Bulletin* 119.

Poisons and Their Antidotes

(*Poisons for which an emetic is always given first. The treatment is in addition to an emetic.*)

Alcohol—In any form—rum, gin, whiskey, proof spirits, etc., also methyl alcohol.

Symptoms—Giddiness, swaying of body, inability to stand. Face flushed, eyes red, skin clammy, weak pulse, may be convulsions and unconsciousness.

Treatment—Hot coffee or aromatic spirits of ammonia. Try to arouse, but if weak do not exhaust by making walk. Dash cold water on face and chest. When somewhat recovered, wrap warmly and put to bed.

Arsenic—Found in rat poisons, vermin killer, Paris green, Fowler's solution. Sometimes in tinned fruits and beer.

Symptoms—Severe pain in stomach; purging; severe cramps in legs, vomiting, dryness of throat, cold sweats, profound shock.

Treatment — Much lukewarm water. Magnesia in large quantity or dialyzed iron in ½ ounce doses, repeated. Beaten-up eggs or castor oil and stimulants. Warmth and rubbing. If rat poison has been taken, treat as for poisoning by arsenic.

Carbon Monoxide—It is in blast and coke furnaces and foundries; in leaky furnaces or chimneys; about gas stoves without flue connections.

The exhaust gases of gasoline automobiles contain from 4 to 12 per cent of carbon monoxide.

Symptoms—Carbon monoxide exerts its extremely dangerous action on the body by displacing oxygen from its combination with hemoglobin, the coloring matter of the blood which normally absorbs oxygen from the air in the lungs and delivers it to the different tissues of the body.

Treatment—1. Administer oxygen as quickly as possible and in as pure form as is obtainable, preferably from a cylinder of oxygen through an inhaler mask. 2. Remove patient from atmosphere containing carbon monoxide. 3. If breathing is feeble, at once start artificial respiration by the prone posture method. 4. Keep the victim flat, quiet and warm. 5. Afterward, give plenty of rest.

Lead—Sugar of lead, lead paint, white lead.

Symptoms—Throat dry; metallic taste with much thirst, colic in abdomen, cramps in legs, cold sweat; sometimes paralysis of legs and convulsions.

Treatment—½-ounce Epsom salts in tumbler of water. Stimulants and soothing liquids.

Opium—Laudanum, morphine, paregoric, some soothing syrups and cough mixtures.

Symptoms—Drowsiness, finally unconsciousness; pulse full at first, then weak; breathing full and slow at first, gradually slower and shallow; pinhead pupils; face flushed, then purple.

Treatment—May have difficulty in getting emetic to work; plenty of strong coffee. Try to arouse by speaking loudly and threatening, but do not exhaust by compelling to walk, etc. Stimulants and artificial respiration.

Phosphorus—In matches, phosphorus paste in many rat poisons and vermin killers, often with arsenic.

Symptoms—Severe pain in stomach, vomiting. Skin is dark and may have odor of phosphorus. Bleeding from nose, bloody purging. Convulsions.

Treatment—Epsom salts, ½-ounce in tumbler of water, or magnesia. Stimulants. Soothing liquid best. Milk. Avoid fats and oils.

Ptomaine—Poisoning by decayed meat, fish, milk or ice cream.

Symptoms—Nausea, vomiting, purging. Skin cold and clammy. Pulse weak. Severe pain in abdomen, cramps, great prostration and weakness. Often eruption on skin.

Treatment—Purgative, castor oil or Epsom salts. Teaspoonful of powdered charcoal, and repeat.

POISONOUS MUSHROOMS OR TOADSTOOLS AND FUNGI

Symptoms—Vomiting, purging, and watery diarrhea. Discharges, sometimes accompanied by blood. Pulse slow and strong at first but later weak and rapid. Saliva and sweat pour out. Dizziness and blindness; some cases convulsions and stupor.

Treatment—Give emetic at once and send for physician, who will administer sulphate of atropin, hypodermically in most cases.

Strychnine-Nux Vomica—Strychnine is frequently used on meat to poison animals, and in some vermin killers.

Symptoms—Convulsions, very severe, alternating with cramps, affecting all muscles of body. Back is bowed up by spasms of muscles. Jaws are locked. Spasm of muscles is so great that it prevents breathing, so face becomes dusky.

Treatment—Powdered charcoal, if possible, in large quantity. Follow with another emetic. Absolute quiet, so as not to bring on convulsions.

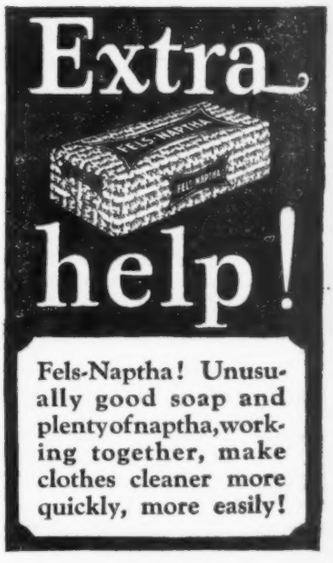
(*Poisons for which an emetic should not be given first.*)

Mercury—Corrosive sublimate, antiseptic tablets. Other salts of mercury much less commonly used.

Symptoms—Corrosive sublimate is very irritating, so when taken turns mouth, lips and tongue white. Mouth is swollen and tongue is shrivelled; always metallic taste in mouth. Pain in abdomen. Nausea and vomiting mucus and blood, bloody purging, cold, clammy skin, great prostration, and convulsions.

Treatment—First, give white of egg or whole egg beaten up; flour and water, but not so good. Emetics, soothing liquids, and stimulants.

(*Poisons for which an emetic should never be given.*)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Removes Dandruff—Stops Hair Falling
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WHITE HOUSE COFFEE

NO housewife can make good coffee if the coffee she buys has lost its flavor. Any housewife can make good coffee from this coffee with the flavor *roasted in*. Try it. There's no secret process. Just use your own good method of making. That fragrant aroma, that rich coffee taste—your family and guests will enjoy them every time you serve White House Coffee.

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Boston — Chicago — Portsmouth, Va.

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THIS way of cooking meats will give them a new taste thrill that will delight your family. *Before cooking*, spread a layer of Gulden's Mustard over both sides of the meat. Then put on the fire or in the oven. The lively mustard taste and the delicate spices of Gulden's will spread through every particle of the meat, adding a wonderful, appetite-arousing flavor. Use it to enliven gravies and vegetables.

Write for free Recipe Book to Charles Gulden, Inc., Dept. A62 48 Elizabeth Street New York City.

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EVERY week the AMERICAN AGRICULTURIST reaches OVER 140,000 farmers in New York, New Jersey, Pennsylvania and adjacent states. Advertising orders must reach our office at 461 Fourth Avenue, New York City, not later than 14 days before the Saturday of publication date desired. Cancellation orders must reach us on the same schedule. Because of the low rate to subscribers and their friends, cash or money order must accompany your order.

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INTERNATIONAL SILOS. Farmers organize silo clubs and get your own at small cost. Agents and farmers working with our salesmen can make good profits. CHARLES N. CROSBY, Pres., Meadville, Pa.

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FREE DOG BOOK. Polk Miller's famous dog book on diseases or dogs. Instructions on feeding, care and breeding with symptom chart. 48 pages. Illustrated. Write for free copy. POLK MILLER PRODUCTS CORP., 102 W. Broad St., Richmond, Va.

"YOU NEED HELP"—You will milk cows 730 times in 1927, buy an English or Welsh Shepherd now, they will bring your cows home this summer, natural heelers from proven workers. GEO. BOORMAN, Marathon, New York.

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SINGLE COMB RHODE ISLAND REDS—Vermont bred, grown, supervised and accredited, fine dark color; Cockerels, same as 200 record hens, supervised $10, others $5. Baby Chicks—Early discounts; order now; circular. ASCUTNEY FARMS, Hartland, Vt.

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FERRIS STRAIN White Leghorn chicks, Leaders in egg production and show winners. 100—$12.00, 500 — $57.50, 1000 — $110.00. JUNIATA POULTRY FARM, Richfield, Pa.

EGGS—POULTRY

SINGLE COMB White Leghorn—Eggs, chicks, breeders, certified stock. Trophy cup for best cock in 1926 New York State Production Show—all classes competing. TRISTRAM COFFIN, Stanfordville, N. Y.

CHICKS—S. C. Buff Leghorns, Barred Rocks, White Rocks, Reds and mixed, 9c and up. All chicks of free range stock. 100% live delivery guaranteed. Circular free. JACOB NIEMOND, Box A, Route No. 2, McAlisterville, Pa.

HIGH GRADE CHICKS—Priced right. Leghorns, Rocks, Reds, Wyandottes, Anconas, Giants, 10c and up. Write for Circular and prices. CHAS. TAYLOR, Liberty, N. Y., Box 12.

HATCHING EGGS from Mammoth White Pekin Ducks. Large purebreds, 150 egg stock. Two dollars for eleven, $7.50 for fifty. GERALD P. RHODES, Clarence Center, N. Y.

WYCKOFF'S WHITE Leghorns. We offer hatching eggs, chicks, 8 week old pullets and cockerels at attractive price. Write for circular. FINE VIEW FARM, Hammond, N. Y.

COLEMAN'S WHITE Wyandottes. Quality Supreme. Chicks—Eggs. Send for 1927 prices now. Satisfaction Guaranteed. JOHN R. COLEMAN, Smithboro, N. Y.

90 VARIETIES POULTRY. Baby Chicks. Dogs. Pigeons. Hares. Ferrets. Cavies. White mice. Catalogue. J. A. BERGEY, Telford, Pa.

SINGLE COMB White Leghorn Chicks, from high producing stock. 10 cents up. GEORGE HOAG, Shavertown, N. Y.

FOR SALE—Rose comb white Leghorn roosters. Price $3.00 and $5.00. HOMER HAWLEY, Lycander, N. Y.

BABY CHICKS, Eggs, Cockerels, Feed—Beef and Fish Scraps. BOX 124, Nelson, Penna. Describe wants.

TOM BARRON CHICKS, the world's best layers, circular free. DAVID M. HAMMOND, Cortland, N. Y.

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PUREBRED ROSE Comb Rhode Island Reds. MRS. EVA D. BREES, DeKalb Junction, N. Y.

BIG, strong, healthy Baby Chicks—Brown, Buff and White Leghorns, Barred and White Rocks, Anconas and Rhode Island High quality, reasonable prices. Write for free catalog and price list. PORTLAND HATCHERY, 500 West Walnut Street, Portland, Indiana.

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BABY CHICKS—Single Comb White Leghorns exclusively. My 26th year breeding the large productive kind. Flock average 50% egg yield all through the winter months. One breed, One quality, One price—$15.00 per 100. GRANT MOYER, Fort Plain, N. Y.

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QUALITY Baby Chicks—Rocks, Reds, Leghorns, Giants, 14c up. QUALITY HATCHERY, Elkview, Penna.

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MAMMOTH TOULOUSE Geese, Mammoth Bronze Turkeys, Hatching eggs $6.00 per 12 postpaid. Fertility and safe arrival guaranteed. Stock for sale. HIGHLAND FARM, Sellersville, Pa.

BOURBON RED TURKEYS—Large healthy birds from prize winning stock; Toms $15 and Hens $12. MRS. WALTER B. SAXTON, Venice Centre, N. Y.

WHITE WYANDOTTE Cockerels; Mammoth Bronze turkeys; Pearl guinea. LAURA DECKER, Stanfordville, N. Y.

FOR SALE—Choice White Muscovy ducks, $5.00 pair. HOMER HAWLEY, Lysander, N. Y.

PUREBRED Bourbon Red Turkeys. GEORGE DELBRIDGE, Maynard, Ohio.

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NINETY ACRE poultry and dairy farm. On State road, seven miles from Kingston, Ulster County. Sixty acres bottom land. Buildings excellent repair, capacity one thousand hens, ten cows, twenty hogs, four horses. Ten-room house electrified, bath, heat. Bus service. Mile water front. Not an abandoned farm, but a money-maker. Possession March first. ROBERT J. HARDER, Lake Katrine, N. Y.

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FOR SALE OR RENT—106 acre farm at Stony Brook, L. I., on cement road. 80 acres under cultivation. Excellent soil for potatoes or cauliflower. Large house and barn. ROBERT F. WELLS, Stony Brook, L. I.

FARM 185 acres, 20 head stock, horses, hens, tractor, milker, valuable timber lot, equipment, crops, price $7,500. $1,750 down, balance $200 yearly. Let your wants be known. MR. DOUGLAS, Herkimer, N. Y.

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WE SOLICIT SMALL or large consignments of farmers or butchers beef and horse hides, etc., at current values, Freight (not express) paid for fifty pounds or more. Write for tags and prices. PENNSYLVANIA HIDE CO., INC., Scranton, Pa.

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DO YOU NEED FARM HELP?—We have able-bodied Jewish young men, some with and some without experience, who want farm work. If you need a good, steady man, write for an order blank. Ours is not a commercial agency. We make no charge. THE JEWISH AGRICULTURAL SOCIETY, INC. Box A, 301 E. 14th St., New York City.

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WANTED—Young married man on dairy farm in Orange County. Can furnish new house with improvements. BOX 14, Woodbury Falls, N. Y.

HOW TO DO IT—PICTURE STORY No. 11

HERE IS MR. GROUND HOG
HOWDY OL' TIMER
WHAT? YOU HERE AGAIN! NOW I'LL HAFTA GIT OUT O' SIGHT FER ANOTHER SIX WEEKS 'T SAVE MY REPUTATION
HIS SHADOW
SOMETIMES HE SEES HIS SHADOW IN FEBRUARY
THE REST OF THE YEAR HE DIGS HOLES AND MUSSES UP MEADOWS AND HAY FIELDS.
HIS WEAK POINT IS THAT HE DOESN'T HAVE A GAS MASK!
PHOOEY! IS THIZ DODE GILL'ED THERE ZUSTHING WRONG 'ITH 'IZ DOKE
THROW A HEAPING TABLESPOONFUL OF CALCIUM CYANIDE AS FAR BACK IN HIS HOLE AS POSSIBLE!
MY MA ALLUS TAUGHT ME NEVER TLEAVE DOORS OPEN BEHIND ME.
BLOCK HOLE WITH SOD OR TRASH AND COVER WITH DIRT.
THE CALCIUM CYANIDE GIVES OFF A POISON GAS THAT KILLS THE GROUND HOG
JOHN, THE GAS IS ESCAPING AGAIN.
SO'S YOUR OL' MAN!
SNIFF SNIFF
—INSPECT HOLES A WEEK LATER— REPEAT TREATMENT IN CASE OF HOLES THAT HAVE BEEN RE-OPENED.
BE SURE TO TREAT ONLY GROUND HOG HOLES.
FUR BEARING ANIMALS ARE PROTECTED BY LAW.
OH DEAR, WHAT A DARLING PLACE TO START HOUSEKEEPING
FOR RENT ONE GOOD GROUND HOG HOLE. WELL FUMIGATED WATER AND GAS GUARANTEED ABSOLUTELY FREE TO GROUND HOGS

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American Iron Roofing Co. .... Middletown, Ohio
American Sheet & Tin Plate Co. .. Pittsburgh, Pa.
J. B. Colt Co. ..... New York City
Delco Light Co. ..... Dayton, Ohio
Edwards Mfg. Co. ..... Cincinnati, Ohio
General Electric Co. ..... Schenectady, N. Y.
Frank Harris Sons Co. ..... Chicago, Ill.
Monarch Paint Co. ..... Cleveland, Ohio
National Electric Light Assn. .. New York City
Patrons' Paint Works ..... Brooklyn, N. Y.
Phillips & Clark Stone Co. ..... Geneva, N. Y.
A. L. Rice ..... Adams, N. Y.
J. M. Seidenberg Co. ..... New York City
Sherwin Williams Co. ..... Cleveland, Ohio

Cement

Portland Cement Assn. ..... New York City

Clothing

Converse Rubber Shoe Co. ..... Boston, Mass.
Hood Rubber Co. ..... Akron, Ohio
U. S. Rubber Co. ..... New York City

Dairy Equipment

Ahorno Laboratory ..... Lancaster, Wis.
American Separator Co. ..... Bainbridge, N. Y.
J. S. Biescker ..... Little Falls, N. Y.
Burton Page Co. ..... Chicago, Ill.
Chloro Chemical Corp. ..... Bloomfield, N. J.
Dairy Assn. ..... Lyndonville, Vt.
De Laval Separator Co. ..... New York City
Drew Line Co. ..... Ft. Atkinson, Wis.
Empire Milking Machine Co... Rochester, N. Y.
Froberg Remedy Co. ..... Valparaiso, Ind.
General Laboratories ..... Madison, Wis.
Hess & Clark ..... Ashland, Ohio
Hinman Milking Machine Co. .... Oneida, N. Y.
James Manufacturing Co. .. Ft. Atkinson, Wis.
Johnson & Johnson ..... New Brunswick, N. J.
Lawrence-Williams Co. ..... Cleveland, Ohio
Louden Machinery Co. ..... Fairfield, Iowa
Myers Sherman Co. ..... Chicago, Ill.
Pine Tree Milking Machine Co. .. Chicago, Ill.
Dr. David Roberts Veterinary .. Waukesha, Wis.
Sharples Milking Machine Co. West Chester, Pa.
Spohn Medical Co. ..... Goshen, Ind.
Troy Chemical Co. ..... Binghamton, N. Y.
Universal Milking Machine Co. Waukesha, Wis.
Vermont Machine Co. ..... Bellows Falls, Vt.
Walker Remedy Co. ..... Waterloo, Iowa
W. F. Young ..... Springfield, Mass.

Farm Machinery and Supplies

Aermotor Co. ..... Chicago, Ill.
American Seeding Machine Co. .. Springfield, O.
Babson Bros. ..... Chicago, Ill.
Fred H. Bateman ..... Philadelphia, Pa.
Bateman Bros. ..... Philadelphia, Pa.
Brown Fence & Wire Co. .... Cleveland, Ohio
Catlahan Distributor Co. ..... Wellsboro, Pa.
Central Tractor Co. ..... Greenwich, Ohio
Collins Plow Co. ..... Quincy, Ill.
Cutaway Harrow Co. ..... Higganum, Conn.
Edwards Motor Co. ..... Springfield, Ohio
Electric Wheel Co. ..... Quincy, Ill.
Empire Mfg. Co. ..... Quincy, Ill.
Eureka Mower Co. ..... Utica, N. Y.
A. B. Farquhar, Co., Ltd. ..... York, Pa.
Ferguson-Sherman, Inc. ..... Evansville, Ind.
Gillette Clipping Co. ..... New York City
Gilson Mfg. Co. ..... Pt. Washington, Wis.
W. W. Gleckner & Sons Co. ..... Canton, Pa.
Hercules Mfg. Co. ..... Centerville, Iowa
Hercules Powder Co. ..... Wilmington, Del.
Hertzler & Zook Co. ..... Belleville, Pa.
Holden Co. ..... Peoria, Ill.
Hunt, Helm, Ferris & Co. ..... Harvard, Ill.
International Harvester Co. ..... Chicago, Ill.
Ireland Machine & Foundry Co. . Norwich, N. Y.
Kitselman Bros. ..... Muncie, Ind.
Leadelad Wire Co. ..... Moundsville, W. Va.
LeRoy Plow Co. ..... LeRoy, N. Y.
Massey-Harris Harvester Co., Inc. Batavia, N. Y.
Masters Planters Co. ..... Chicago, Ill.
Muncie Gear Works ..... Muncie, Ind.
New Idea Spreader Co. ..... Coldwater, Ohio
New Jersey Fence Co. ..... Burlington, N. J.
Ottawa Mfg. Co. ..... Pittsburgh, Pa.
Pance Machine Co. ..... Shortsville, N. Y.
J. B. Sedberry Co. ..... Chicago, Ill.
Sproul Hardware & Mfg. Co. ... Delevan, N. Y.
Walsh Harness Co. ..... Milwaukee, Wis.
Witte Engine Works ..... Kansas City, Mo.
W. W. Feed Grinder ..... Wichita, Kansas.

Fertilizers

American Agricultural Chem. Co. New York City
Barrett Co. ..... New York City
Buffalo Slag Co. ..... Buffalo, N. Y.
Chilean Nitrate of Soda Educational Bureau .... New York City
Jacob Dold Packing Co. ..... Buffalo, N. Y.
International Agricultural Corp. New York City
Mapes Formula & Peruvian Guano Co. ..... New York City
Potash Importing Co. ..... New York City
Swift & Co. ..... Chicago, Ill.
Wilcox Fertilizer Co. ..... Mystic, Conn.

Household Goods

Akron Lamp Co. ..... Akron, Ohio
American Stove Co. ..... Lorain, Ohio
Armstrong Co. ..... Lancaster, Pa.
Calumet Baking Powder Co. ..... Chicago, Ill.
Coleman Lamp Co. ..... Wichita, Kansas
Colgate & Co. ..... New York City
R. B. Davis Co. ..... Hoboken, N. J.
Dwinell-Wright Co. ..... Boston, Mass.
Fels & Co. ..... Philadelphia, Pa.
Foster Bros. Mfg. Co. ..... Utica, N. Y.
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Jello Co. ..... LeRoy, N. Y.
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Parker's Hair Balsam ..... Patchogue, N. Y.
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Potter-Wrightington Co. ..... Boston, Mass.
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Smorton Wall Paper Co. ..... Utica, N. Y.
Swift & Co. ..... Chicago, Ill.
Wells & Richardson ..... Burlington, Vt.
Wyeth Chemical Co. ..... New York City

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Michigan Limestone Co. ..... Buffalo, N. Y.
N. J. Limestone Products Corp. . New York City
Solvay Process Co. ..... Syracuse, N. Y.

Livestock Feeds

Associated Corn Products Mfgrs ... Chicago, Ill.
Chapin & Co. ..... Chicago, Ill.
Co-Operative G.L.F. Exchange Inc., Ithaca, N. Y.
Corn Products Refining Co. ... New York City
Jacob Dold Packing Co. ..... Buffalo, N. Y.
Larrowe Milling Co. ..... Detroit, Mich.
Linseed Crushers Meal Corp. ..... Chicago, Ill.
Quaker Oats Co. ..... Chicago, Ill.
Quisenberry Feed Co. ..... Kansas City, Mo.
Tioga-Empire Feed Mills .... Waverly, N. Y.
Ubiko Milling Co. ..... Cincinnati, Ohio

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Brown's Beach Jacket ..... Worcester, Mass.
Larkin Co., Inc. ..... Buffalo, N. Y.
Kalamazoo Stove ..... Kalamazoo, Mich.
Meade Cycle Co. ..... Chicago, Ill.
Montgomery Ward & Co. ..... Chicago, Ill.
National Cloak & Suit Co. ..... New York City
Sears-Roebuck & Co. ..... Chicago, Ill.
Spear & Co. ..... Pittsburgh, Pa.
Charles William Stores ..... New York City

Nurseries and Seeds

W. F. Allen ..... Salisbury, Md.
Allen's Nurseries & Seed House .. Geneva, Ohio
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Bountiful Ridge Nurseries .. Princess Anne, Md.
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Theo. Burt & Sons ..... Melrose, Ohio
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Albert Dickinson ..... Chicago, Ill.
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Ford Seed Co. ..... Ravenna, Ohio
Forrest Seed Co. ..... Cortland, N. Y.
Green's Nursery Co. ..... Utica, N. Y.
J. J. H. Gregory & Son Inc... Marblehead, Mass.
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Harrison's Nurseries ..... Berlin, Md.
Peter Henderson & Co. ..... New York City
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Kendall & Whitney ..... Portland, Me.
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Stark Bros. Nurseries ..... Louisiana, Mo.
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West Hill Nurseries ..... Fredonia, N. Y.
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H. M. Stauffer & Son ..... Leola, Pa.
Turner Bros. ..... Bladden, Neb.
United Brooder Co. ..... Trenton, N. J.
Wisconsin Incubator Co. ..... Racine, Wis.

Radio

Atwater Kent ..... Philadelphia, Pa.
Crosley Radio Co. ..... Cincinnati, Ohio
Diamond Electric Specialties .. Newark, N. J.
Midwest Radio Co. ..... Cincinnati, Ohio
Naylor Radio Co. ..... New York City
Radio Corp. of America ..... New York City

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Economy Silo Co. ..... Frederick, Md.
Globe Silo Co. ..... Unadilla, N. Y.
Grange Silo Co. ..... Red Creek, N. Y.
Harder Mfg. Co. ..... Cobleskill, N. Y.
Ribstone Concrete Corp. ..... Adams, N. Y.
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Thomas and Armstrong Co. .... London, Ohio
Unadilla Silo Co. ..... Unadilla, N. Y.

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Golden State Milk Prod. Co. San Francisco, Cal.
Hammond's Paint & Slug Shot Works ..... Beacon, N. Y.
F. E. Myers & Bros. Co. ..... Ashland, Ohio
Niagara Sprayer Co. ..... Middleport, N. Y.
B. G. Pratt Co. ..... New York City
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Tobacco By-Products & Chemical Co. ..... Louisville Ky.

Miscellaneous

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American Telephone & Telegraph Co. ..... New York City
Bartlett Co-operative School .. Stamford, Conn.
Cedar Hill Formulae Co. .. New Britain, Conn.
W. E. Coleman ..... Washington, D. C.
D. & C. Navigation Co. ..... Detroit, Mich.
Del-Mar-Va Eastern Shore Assn. Salisbury, Md.
Famous Players Lasky Corp. .. New York City
Federal Land Banks ..... Washington, D. C.
Iroquois Bag Co. Inc. ..... Buffalo, N. Y.
L. & N. R. R. Co. ..... Louisville, Ky.
McSweeny Auto Shop ..... Cincinnati, Ohio
National Sportsman ..... Boston, Mass.
New York Central ..... New York City
Newton Remedy Co. ..... Toledo, Ohio
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